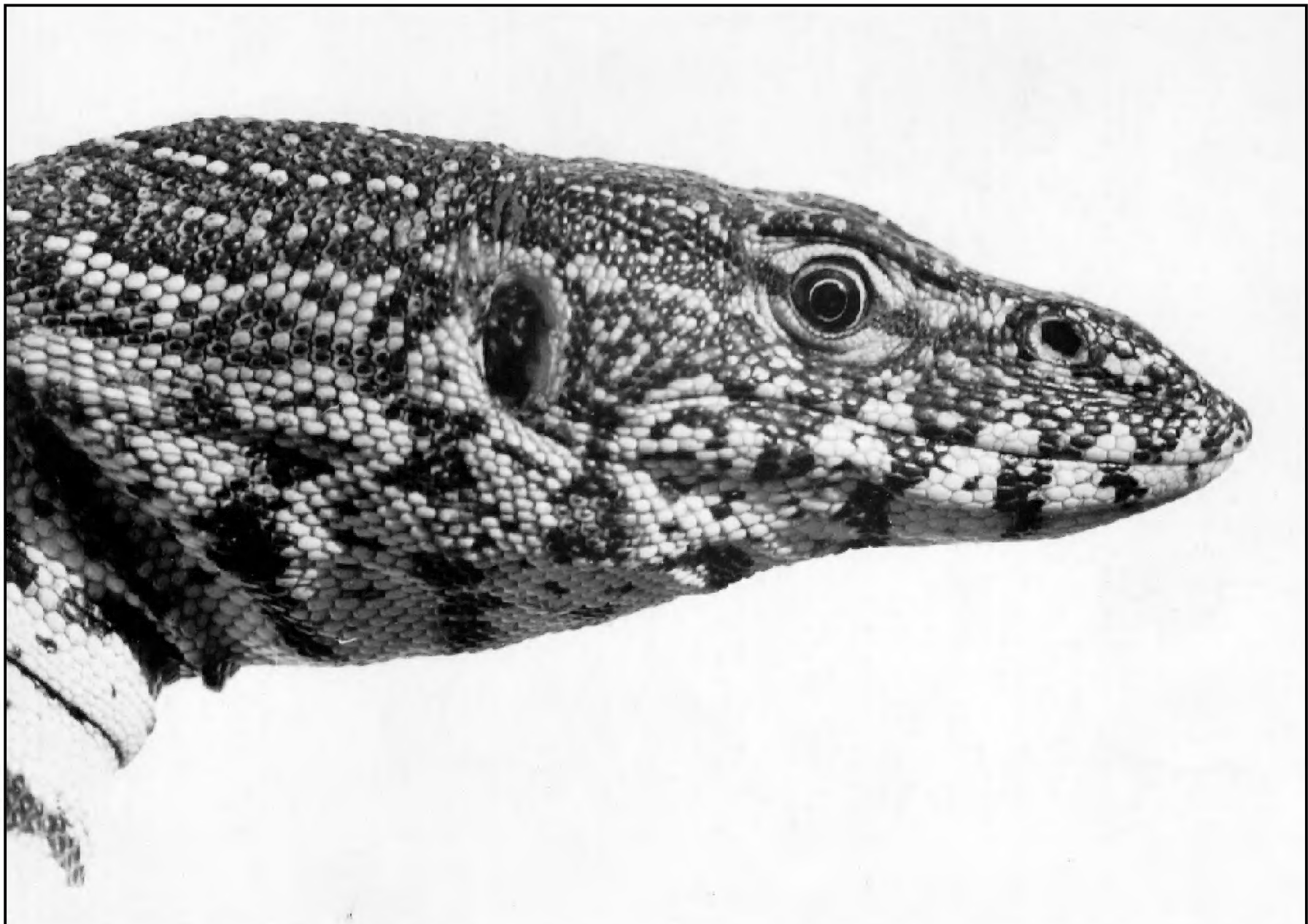

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Observations on *Hemidactylium scutatum* Habitat and Distribution

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With continuing habitat destruction, it is particularly important to understand the habitat requirements of herptiles with a more restricted or "patchy" occurrence, so that remaining populations can be found and preserved. The four-toed salamander, *Hemidactylium scutatum*, is such a species. It is largely absent, even in "continuous" parts of its range (as mapped in Conant and Collins, 1991), and overlooked populations continue to be found. For instance, in Illinois, Smith (1961) listed records from only Cook and Lake counties in the greater Chicago area. Isolated colonies have since been found in the following counties: Ogle (Lynch, 1965), Jersey (Smith, 1974), Knox (Schramm and Nordgren, 1977), McDonough (Frankland, 1980), Lawrence (Thurow, 1981), Rock Island (Thurow and Sliwinski, 1991), and Vermillion (Philips, 1991).

Adult Habitat

Reviews (Bishop, 1941, and Daniel, 1989) of earlier observations generally coincide with my experience. Adults have been found in deciduous or coniferous forests, shrublands, grasslands, wet meadows, bogs and swamps. However, the adults are primarily forest floor animals and not characteristic of prairie. They can be found under almost any kind of cover, but I usually find them under rocks or logs, or in moss or wet leaf masses. In unfavorable weather they go underground. When they are near the surface they don't always use the typical shelters. This is particularly true for males hunting for females in the fall, or females migrating to nest sites in the spring. For instance, Frankland and Vogel (Frankland, 1980) found two Illinois males in a dry streambed in October. I visited this spot, and noted that it is either too hot, too cold, or underwater during most other times of the year.

Nest Site (Egg) Habitat

Bishop (1941) found eggs only in sphagnum moss in New York, and this moss is mentioned most frequently as a nest site (Daniel, 1989). However, Gilbert (1941) found 27 of 32 Ithaca, New York, nests in mosses of three other genera. Wood (1955) found nests in many other species of mosses (12 other genera) in Virginia, and in four genera of hepatics. He also found eggs in rotten wood (as have Blanchard, 1922, and myself); under bark (as did Blanchard, 1922); among leaves and stems of sedges; in damp mounds of pine needles; and even in a hollow cypress knee. Breitenbach (1982) mentioned several of the above nest locations, plus leaf litter, which I have also seen. Bishop (1941) also mentions "among moss rhizoids and grass roots", and Harris and Gill (1980) describe "thick grasses and rushes" as nesting microhabitat. Smith (1974) describes two nests on soil, under a rock by the edge of a spring-fed pool. So it appears that *Hemidactylium* eggs can be deposited in many microhabitats, as long as these are moist and prevent egg dehydration.

The egg sites must also be near water, so that hatchlings can reach it. Blanchard (1934a) and Bishop (1941) state that eggs are usually directly above water. They are at least within a few inches of the water (Bishop, 1920, and Blanchard, 1922). I recorded some nests that were a few feet away from water in Lawrence and Rock Island counties, Illinois, but these were upslope so that hatchlings could easily wriggle to the water during spring rains. Wood (1955) noted two nests that were still further away, but it appeared that the water level had receded between rains.

Larval Habitat

Waters suitable for *Hemidactylium* larvae are restricted by several factors. First, Dunn (1926) and Bishop (1941) note that larvae live in and are adapted to still water, and various papers mention ponds, pools, swamps or bogs. All flowing water is not precluded, but a strong current would tend to carry away these weakly swimming larvae. In more than 40 years of field work, I have seen *Eurycea cirrigera* larvae in large streams, but not *Hemidactylium*. Easterla (1971) found adults by pools of a small stream, but not by the riffles. I also noted *Hemidactylium* colonies around small streamlet headwaters that were quiet rather than rushing, in Illinois, Tennessee and West Virginia. Wood (1955) did not find flow rates exceeding 0.2 miles per hour in Virginia.

Second, like many amphibian larvae, they do not survive well in waters with predaceous fish. Other have observed this in detail (Sexton and Philips, 1986). I also have observed fish (mostly, *Lepomis cyanellus*) eating frog and salamander larvae many times near my home.

Third, *Hemidactylium* larvae are not found in large bodies of water. Such waters usually contain predaceous fish, have wave action rather than still water, and may have other unfavorable factors.

Fourth, *Hemidactylium* larvae require waters that do not dry up until late summer. Blanchard (1923) estimated one metamorphosis at around 15 July, but Bishop (1941) kept some larvae until October. In Illinois I saw recently metamorphosed individuals on 5 August in McDonough County, but others were still larvae.

Fifth, the larvae should survive better with more protection against predation. In dark-stained bog waters the larvae are practically invisible. In shallow waters with a light-colored bottom, the animals are less visible under and among detritus, and over several years I have many times seen them take shelter here and in recesses under rocks and roots, or logs.

Metamorphosis Habitat

Tiny juveniles would quickly desiccate in a dry or exposed

environment. Moss at the water's edge is a favorable habitat. I saw a recently metamorphosed individual run across a moist, sandy streambed to the shelter of such moss on 5 August 1984, and I have also found such animals in this moss. Moss holds moisture, and has less air movement and a higher humidity. It also has evaporative cooling, gives easy shelter from predators, and contains a fauna of microscopic animals to feed on. The same features may be provided by a mass of wet leaves or rotten wood, and I have also repeatedly found juveniles on moist soil under leaves or other debris near breeding waters.

Seasonal Surface Activity and Latitude

Hemidactylium shows phenological effects. In the Florida panhandle surface activity occurs in the winter (Stevenson, 1958, and Fugler and Folkerts, 1967). An egg clutch was found on 23 February in Alabama (Mount, 1975). In coastal Virginia oviposition was from 24 February to 10 March (Wood, 1955). In southern Illinois (Lawrence County) I observed females at oviposition sites in late March, while oviposition took place near mid-April in Rock Island County to the north. In southern Michigan and south-central New York oviposition extends from mid-April to May (Blanchard, 1934b, and Bishop, 1941). In southern Wisconsin (Vernon County) egg laying is in late April, while it occurs in mid-June on Stockton Island in northern Wisconsin (Vogt, 1981).

Thermal Biology

As shown by Brattstrom (1963), body temperatures of plethodontids (and their immediate surroundings) average lower than for ambystomids or salamandrids (which have pond-type larvae like *Hemidactylium*). Presumably this relates to lunglessness and restricted respiratory capacity. Most of Brattstrom's temperatures for U.S. plethodontid genera do not much exceed 20°C (ibid), and indicate that most are active above 5°C. Bishop's (1941) comments about early and late surface activity suggest that *Hemidactylium* can be found near freezing (0°C). Brattstrom (ibid) does not present field temperature data for *Hemidactylium*, nor do Feder et al. (1982). In McDonough County, Illinois, my field notes show repeated *Hemidactylium* sightings under shelters with nearby 7–15°C air temperatures (six averaged 11½°C). LaPointe (1953) found one *Hemidactylium* on a road in northern Indiana, in the rain at 11°C. I found another in Tennessee on 19 April 1966, on 11°C soil with nearby air temperatures of 15½°C. About 20 more were found 13 April 1986 in Rock Island County, Illinois, at 16°C air temperature. On 18 September 1963 in Lawrence County, Illinois, adults and juveniles were found on 20°C soil, while chest-high air temperatures were 27°C in the forest and 30°C outside in the sun. I found Illinois larvae in 17½°C water, while chest-high air temperatures in the forest could be 28°C, and exceed 40°C out on the soil surface of nearby sunny fields. Other larval water temperatures were 17 and 19½°C. The warmest temperatures reported were 19–24½°C for nine egg masses in coastal Virginia (Wood, 1955). He got warmer nearby air temperatures and usually slightly cooler adjacent water temperatures (21–23°C). Southern populations with tolerance for higher temperatures (ecotypes) might exist, but have not been demonstrated.

Moisture Relations

The metamorphosed salamanders definitely prefer to be in contact with wet or at least damp surrounding materials. The relative humidity of nearby air can be fairly low. My field notes give 81%, 59%, and one dry September even 40%, taken with a sling psychrometer. The salamanders prevent desiccation by usually remaining under shelter objects and in contact with moist materials.

Associations with Other Salamanders

Hemidactylium is one of the smallest North American amphibians, which may help explain why it is rare or absent in many apparently favorable locations with larger salamanders. In glaciated regions *Hemidactylium* is often locally about the only salamander present (but see Daniel, 1989). In unglaciated regions many other species may coexist with it. Wood (1955) lists several other species in coastal Virginia, but does not specify how close they occur with *Hemidactylium* colonies. In Pendleton County, West Virginia, by a ravine streamlet, I also found *Plethodon cinereus*, *P. hoffmani*, *P. glutinosus*, *Eurycea bislineata* and *E. longicauda* nearby. Still other species occur in the area. In a Unicoi County, Tennessee, locality not shown in the *Hemidactylium* range (Conant and Collins, 1991) this salamander coexists in a *Tsuga caroliniana* and *Rhododendron maximum* seepage swamp with even more salamander species. In the immediate vicinity, *Plethodon glutinosus* complex, *P. welleri*, *Eurycea wilderae*, *Desmognathus ochrophaeus* and *Notophthalmus viridescens* were found. In the immediate area but a little further away were *Plethodon cinereus*, *P. jordani*, *P. yonahlossee*, *Desmognathus monticola*, *D. quadramaculatus*, *Pseudotriton ruber* and *Gyrinophilus porphyriticus*. Most of these larger salamanders are potential competitors or predators for *Hemidactylium*.

Summary of Habitat-limiting Factors

In spite of the variety of habitats where eggs and adults may be found, several restricting factors must be met for *Hemidactylium* colonies to exist. These include: (1) usually forested area nearby; (2) small bodies of quiet water with no predaceous fish; (3) water margins with moist oviposition sites, that allow hatchlings to reach the water; (4) waters which do not dry up until at least late summer; (5) waters that are stained by dissolved materials or where the bottom has some recesses or objects to give hiding places for the larvae; and (6) waters whose temperatures do not exceed about 25°C all summer.

The limited vagility of *Hemidactylium* means that it only continues to survive where favorable conditions continue, or make slow geographic shifts. Waters that are spring fed or more continuous with the underground water table have more stable temperatures, and last longer seasonally and in geologic time. Conant (1960) notes that relict populations (in Missouri and Arkansas) presumably indicate continuous cool micro-climates in mesic forests since glacial times.

Regional Factors in the *Hemidactylium* Range

Limiting factors are reflected by the boundaries of the

range, and are modified by regional differences. To the east the range is limited by the Atlantic Ocean. To the west, less rainfall and moisture appear to be limiting, for both forests and appropriate waters. Subterranean contributions to surface waters are particularly important. P. W. Smith (1956), Easterla (1971), S. L. Smith (1974), and Johnson (1987) all cite western specimens associated with springs, and I have also seen this in Illinois. The northern border of the range appears to be limited by temperature. That is, the small breeding ponds remain solidly frozen for such a long part of the year that larvae cannot complete metamorphosis. The southern range limit also is probably by temperature. Note how the Virginia colonies of Wood (1955) are essentially the southernmost occupation of the lowland coastal plains. Vast areas of swamp in more southern coastal plains are unoccupied. The few small relict exceptions may have cooler microclimates. Upper temperature tolerance limits or possible interactions with southern coastal lowland forms such as *Desmognathus auriculatus*, *Stereochilus marginatus* and *Eurycea (Manculus) quadridigitata* may largely exclude *Hemidactylium*. Ashton and Ashton (1988) show *Hemidactylium* sharing two Florida counties with *E. quadridigitata* and say they are “commonly found in similar habitats,” but do not specifically report finding them together.

The range of *Hemidactylium* can be subdivided into four parts, which show some differences. These are (1) the part once covered by the most recent (Wisconsin) major glaciation, (2) other areas covered only by older glaciations, (3) unglaciated uplands, and (4) unglaciated coastal lowlands.

In the area covered by the Wisconsin glacier there are many masses of glacial deposits which can dam up surface drainage and form ponds. There are also special features such as kettle ponds (formed where blocks of ice melted), which become tamarack bogs. Early workers like Bishop (1941) and Blanchard (many papers, cited in Bishop, *ibid*) described *Hemidactylium* habitat from this area, and perhaps influenced others to think that this was typical habitat throughout the species' range, including the special importance of sphagnum moss. Dundee (1968) comments on this for southern localities.

Older glacial deposit areas have fewer ponds and more efficient surface drainage. However, there can be areas of reduced drainage, plus moisture reservoirs in and seepage from coarser glacial deposits. Red Hills State Park, in Lawrence County, Illinois, contains a large mound or hill of partly unsorted Illinoian glacial deposits which could be called a kame. A normal dendritic drainage pattern has not yet been re-established. Instead, a hollow on one side is drained by parallel streamlets forming a trellis drainage pattern. These parallel small valleys may represent bands of coarser deposits which lie between ridges containing more clay in the till, or possibly more compacted till. Glacier movements are not isolated events but form clusters of major and minor cyclical oscillations (diagram in Thurow, 1955 thesis, Figure 3). Groundwater feeds these gully “seeps” so there are always some cold water pools with overhanging moss. The Burlington, Iowa, U.S.G.S. topographic map with a 1:250,000 scale

clearly shows a major trellis pattern in the drainage of the upper LaMoine River in west-central Illinois (see Fentem, 1968). Caspall (1965 thesis) believed the pattern resulted from streams forming in parallel crevasses in the melting glacial ice. Croswell (1980 thesis) suggested that the parallel postglacial valleys developed in relation to a preglacial system of joints in the underlying rocks. Or again, there may be differences in the till compaction or particle size relating to cyclical glacial regimes. These streams tend to form straight narrow WSW–ENE ravines with a gentle gradient that tap into coarser glacial deposits and so are fed by groundwater. Shading in the gullies favors moss growth overhanging the streams. And the gentle gradient and groundwater allow cool, still pools all summer in a few less disturbed ravines. This is the situation for the McDonough County *Hemidactylium* colony (Frankland, 1980).

In unglaciated upland areas there are more slopes and streams, and seepage emerges from more porous rock layers. Ponds or bogs sometimes form in downfaulted depressions or at the foot of slopes, and in areas of differential erosion or subsidence such as karst depressions (limestone sinkhole ponds, Thornbury, 1954). The Pendleton County, West Virginia, and Unicoi County, Tennessee, areas both involve streams with groundwater seepage and at least some sluggish pools.

In the flatter coastal plain lowlands there are many bog or swamp areas in minor depressions. Streams often are slow-flowing because of a low gradient. The less consolidated sediments may allow extensive contact between surface waters and the cooler underground water table. The Gulf Coast relict areas are often associated with cooler ravine or seepage areas that some regard as glacial refugia (Morse, 1980) because organisms with more northern ranges survive there. Most agree that *Hemidactylium* reached these southern coastal plain areas as part of a southern range displacement during glacial times (Means, 1992).

Glacial Effects

Hemidactylium abundance or distribution has been associated with glaciated areas (Dunn, 1926, p. 25; Smith, 1956; and Thurow, 1968). The present pattern of peripheral relict *Hemidactylium* records and the association of the species with glaciated territory both suggest that somehow periglacial conditions were favorable. The basis for the association is the abundance of cold ponded water that tends to form during and after glaciation, because glaciers are a source of water, and glaciers, glacial deposits, and periglacial outwash deposits all interfere with the former pattern of more efficient dendritic stream drainage. The stream flow is less rapid, and erosion to wider sunnier valleys takes longer. Glacial deposits also contain underground aquifers, which are a source of cold groundwater seeps and springs. The maximum range extent, range continuity, gene flow and population size for *Hemidactylium* should occur soon after a major glacial retreat. The territory recently abandoned by the ice is re-occupied by the salamander, and areas peripheral to the maximum extent of the major pulse are still habitable. Then during the long interglacial periods the *Hemidactylium* habitats in both glaciated and unglaciated areas gradually shrink into small, isolated

relicts. Again, the above comments on geomorphological effects are not speculation, but have been previously described (e.g., Thornbury, 1954).

Human Effects

Acid rain can raise salamander egg or larval mortality (Pough and Wilson, 1977; Dunson and Connell, 1982; and Ling et al., 1986). *Hemidactylium* breeding might be especially affected in tamarack bogs NE of U.S. industrial areas, because the pH is already low. Larvae should be more affected than eggs, because the latter are out of water and sometimes sheltered from rain. Waters in usually alkaline glacial deposits are less easily acidified, and limestone can be added (Thurrow, 1994). The spoil deposits left by older strip mining methods tend to interfere with normal dendritic drainage patterns and cause pooled water and even underground seepage in a way curiously reminiscent of glacial action. If the initial damage does not wipe out *Hemidactylium* populations, the abandoned strip mined areas may actually favor survival. The Knox County, Illinois, population (Schramm and Nordgren, 1977) is in a former strip mined area. Acid seepage from

certain kinds of rock spoil is unfavorable (as in Kentucky), but when much of the overburden is alkaline glacial deposit this harm is reduced. Finally, if the water table in the eastern U.S. is lowered even temporarily through excessive underground pumping (e.g., Bowman, 1991, Figure 17; Schicht and Buck, 1995, Figure 12; and Visocky, 1993, Figure 6), as in some parts of the SW U.S. (Ehrlich et al., 1977, p. 263), groundwater flows to the surface may diminish or disappear. Draining or devegetation can cause surface waters to warm up, become silty, or even disappear. All these changes can lead to extirpation of any four-toed salamander colonies.

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Safe Water Bowls for Neonate Snakes

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In a recent review of John and Roxanne Rossi's book, *Snakes of the United States and Canada: Keeping Them Healthy in Captivity, Volume 2 Western Area*, Lani Lyman-Henley makes a statement that caught my (MW's) attention. She writes, "I found the suggestion to cover neonate water bowls with a lid with a hole in it dangerously reminiscent of a trap that could easily drown entrants" (Lyman-Henley, 1996). Although I saw her point (the design does remind one of fish and turtle traps), I knew that these water bowls had been used for years and was unaware of any drownings. I have used them myself to water neonate rosy boas (*Lichanura t. trivirgata*), as a technique to reduce evaporation into their plastic shoe boxes. The trick also helps to prevent spillage if the bowl is not too full, the top is tight, and the hole is in the middle.

I decided to follow up on Lyman-Henley's warning, and see if snakes had indeed died in this way. Knowing that Bob Applegate had bred thousands of snakes over the years, and that he used this water bowl design (Applegate, 1992), I wrote and asked him about the hazards. His reply contained so much important information that I asked him for permission to

publish it in the *Bulletin*. He kindly agreed to this, and his thoughts follow:

The hole in the lid of water containers for baby snakes is excellent. It cuts down the evaporation and moisture inside the cages. I have used them for years, mostly with shoebox and sweater box systems. Used properly they are safe; used improperly they can be fatal. The first rule is that the container has to be large enough for the snake to coil inside without the water level being pushed to the top. The second rule is that the container has to be tall enough and wide enough that it can't turn completely on its side without the lid of the cage stopping it. Obey these rules and you will not have any problems. Violate the first rule and too large a snake will try to cram itself inside the water container and drown. Violate the second rule and the container will flip over and the animal inside will suffocate. I have had both happen. Also, too deep a container for a small neonate can trap and drown it. The depth of the container should be no more than two-thirds of the snake's length, preferably half or less. Put the water container over the heat for more cage humidity; move it away from the heat for less. One final note: Every time I have had a fatality over the years, I have known that it was I who made the error. Usually I had let the snake grow too large without upgrading the size of its water container.

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**Book Review: *Green Iguana: The Ultimate Owner's Manual* by James W. Hatfield III
1996. 671 pp., including color photographs. ISBN 1-883463-48-3. Softbound.
Dunthorpe Press, Dept. C, P.O. Box 80385, Portland, OR 97280, (503) 635-8222. \$28.50 + s&h**

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In recent years, as reptiles have become an ever-increasing part of the pet industry, the number of captive green iguanas in American households has grown astronomically. These animals can be found in virtually every pet store across the country. More often than not, these lizards, deceptively small as juveniles, are sold to their naive, yet well-meaning new caretakers with little more than a thank-you and a few helpful hints such as "feed it lettuce and don't forget your hot-rock." For most of these creatures the outlook is quite grim.

In the past, the information provided by books on iguana care often has been misleading and contradictory. Some basic advice on iguana nutrition, for example, that seemed sound as recently as five years ago would be regarded as detrimental today. One key in learning to care successfully for any reptile or amphibian in captivity is to communicate with knowledgeable people who share an interest in that animal. James Hatfield has done precisely this in compiling *Green Iguana: The Ultimate Owner's Manual*.

A few years ago, I received a detailed questionnaire requesting information on how I cared for my iguanas. The returned comments were to be used in a book being planned by Hatfield. Being a procrastinator, I set it on my desk with every intention of completing it and sending it back. But this never happened. Fortunately for present and future iguana owners, over 800 people did complete the task, resulting in the most *thorough* book on green iguana care that I have ever read.

The nine chapters in this book are: "Iguana: The Species," describing the biology and natural history of green iguanas; "Iguanas as Pets," which will help readers decide if an iguana is the right pet for them; "Choosing Your Pet"; "Housing," which includes information on lighting, heating and habitat requirements; "Feeding," which not only describes what to feed but also deals with vitamin supplementation etc.; "Special Care," with tips on such things as claw trimming; "Medical Troubleshooting"; "Domestication"; and "Breeding."

Following the main body of the book are ten appendices, one of which suggests additional sources of information, such as herpetological societies (the CHS is included) and books, and lists various iguana-related products and services. Appendices D-I contain useful facts on habitat-, incubator-, and nest box construction. The latter is very important considering that most iguana owners have no idea that a nesting box may be needed at some point, much less how to build one. Finally, there is a thorough index followed by 16 pages of color photographs.

The meat of the book is derived from Hatfield's experiences raising his own iguana, named Za, and, as I mentioned earlier, from personal accounts sent in by over 800 iguana owners, academics studying iguanas, and veterinarians. Because much of what there is to know about successfully caring for iguanas has come through trial and error over long periods of time, these anecdotal accounts can definitely help inexperienced iguana keepers avoid many of the pitfalls.

Over the years I have talked with hundreds of fellow iguana enthusiasts about every possible aspect of iguana care and have found their stories and experiences to be not only useful but very entertaining. I feel the same about the anecdotes that fill this book. Some of them seem like carbon copies of episodes I've had with my own iguanas over the years. In my opinion, these little stories hold truly valuable lessons for those who are willing and able to learn from them.

The title of this book is no exaggeration. Never before have I seen such a thorough book on the care and maintenance of green iguanas. This book answers almost every imaginable question, from calcium-to-phosphorous ratios to how large to chop the food; from how to choose a substrate to how to spot illnesses. In the words of an old TV commercial: "It's in there."

One of the few problems I found with this book was the tendency of the author and many of the questionnaire respondents to anthropomorphize and generalize based on their personal pets. In my experience, no two iguanas are alike, and any one can display endearing as well as unlikable or even hostile behaviors. Some of the accounts by the author and others about their iguanas' abilities to think and reason about things or situations seem outrageous to me.

Another concern I have about the book is that the author has chosen to be the sole distributor. Given the manner in which the book is being promoted and sold, I think many of the people who need this information the most, namely first-time iguana buyers in pet stores across the country, may never even realize that this wealth of information exists. So far, the only ones who are aware of this book are people already involved in the herpetological community in some way.

Overall, James Hatfield III has succeeded in compiling the most definitive information to date on the captive husbandry of the green iguana. Many, if not all, of the common mistakes made by novice iguana keepers can surely be avoided just by reading this book. With its useful, factual information and its amusing anecdotes, this book is a must for anyone who presently has or contemplates getting a green iguana as a pet.

HerPET-POURRI

by Ellin Beltz

Internet roundup again

Regular readers of this column know that from time to time I clear out my E-mail in-box and summarize items of herpetological interest from other writers. Every attempt to clearly mark what is quoted (“ ”), what is paraphrased ([]), and what is omitted (. . .) has been made in the following paragraphs. If you have an issue with what someone has written below, please take it up with the original author. Neither the writer of this column nor the CHS is responsible for any of the actions described below. We are merely sharing them with our readers.

Photos wanted

“I am in need of good quality slides of both amphibians and reptiles in a commercial setting, i.e. pictures of tubs of leopard frogs, pens filled with box turtles, etc. I am also looking for a slide of a large garter snake breeding swarm. I will duplicate any slides you contribute and credit you for them. . . . Robert Hay, Wisconsin Dept. of Natural Resources, P.O. Box 7921, Madison, WI 53707 <hayr@dnr.state.wi.us> . . . These slides will be used to educate our governor-appointed Natural Resources Board and legislators about herp commercialization and also for public education.”

Forest destruction in Michigan

A four-part series in a Michigan newspaper details a story that I’ve not seen in any national press, and certainly wouldn’t have expected from a state which relies so heavily on tourism for income. Posted 11/25/96 by Jim Harding <jharding@museum.cl.msu.edu>, “They really are making a shambles of the great ‘north woods’—I’ve seen some of it myself!” I’ll happily send anybody with an E-mail address a full copy of this, but the gist of the articles by Curt Guyette is: Using taxpayer subsidies, the Michigan gas industry is siphoning minerals from beneath thousands of acres in the north woods, turning pristine wilderness into stripped splotches. . . . What [the] investigation found: Natural gas drilling up North has wreaked environmental havoc, fragmenting forests and disrupting natural habitat in what one critic calls the “single biggest land disturbance in North America.” Tranquil rural areas consisting mostly of farms and forests have been transformed into noisy, congested industrial zones. In the process, property values are being threatened and Michigan’s north woods are losing their pristine nature. This development has not been propelled by market forces, but rather by federal tax cuts and a sweetheart deal the [Michigan governor’s] administration quietly cut with the state’s energy industry. Oil and gas interests have given Gov. John Engler more than \$360,000 between 1989 and 1995. In return, the industry has reaped more than \$4 million per year in subsidies and an unfettered opportunity to drill wells, cut roads and lay pipe without regard to the overall damage to the ecosystem. Attempts to rein in the industry and limit environmental damage have been fought fiercely by the Engler administration. The department charged with protecting Michigan’s environment has suffered large-scale staff cutbacks while watching its workload soar. As a result, regulatory efforts have been decimated. The oil and gas industry has

taken the sweetheart deal it cut with the state and imposed it upon private citizens, slashing what little compensation property owners may be entitled to for the rape of their land. . . . “It is hypocrisy at its worst,” chides Keith Schneider, co-founder of the Michigan Land Use Institute in Benzonia. “A remarkable landscape has been unnecessarily damaged for a resource whose value has been declining every year, all so the governor could subsidize a small group of private donors to the exclusion of every other concern. . . .” “Take a look at that little trout stream over there,” instructs Tom Edison, pointing to a tree-shaded brook meandering off to his right. “Last winter that was crystal clean. You could look down and see the fish swimming in it. Now it’s so clouded with this brown haze, you can’t see anything. Something’s getting into it.” The conservationist isn’t sure what’s mucking up the once-clear waters, but he sure knows how and why. “The state just doesn’t have the manpower to control what’s going on here,” contends the former college professor. Edison’s far from alone in fearing the worst. “Any time you disturb the land like it’s been disturbed here, you’re going to have erosion,” explains Gaylord Alexander. Now retired from the DNR, Alexander took part in a study three years ago that estimated that between 30,000 to 300,000 trout would be killed because of erosion from . . . gas drilling. “The land’s all broken up now,” he laments. “Every 10 acres has a road on it. Just the fragmentation itself—people are eventually going to realize what a big loss this has been.” None of it makes much sense, says Alexander. “I’m not a Sierra Club type,” he explains. “But going in and mutilating the land to speed up the extraction of a nonrenewable resource doesn’t seem like wise use to me.”

Snake smugglers charged

“A 3-year investigation by Federal agents from the U.S. Fish and Wildlife Service resulted in an indictment today against six individuals charged with multiple offenses of smuggling rare and endangered snakes and tortoises from Madagascar. . . . The indictment alleges that the individuals engaged in a multi-year conspiracy and smuggled approximately 170 protected reptiles from their native habitat in Madagascar. . . . The animals were secretly transported in a variety of ways through Europe, Canada, and the U.S. where they were sold to wildlife dealers and collectors. According to the indictment, the conspiracy included recruiting and employing couriers who repeatedly concealed snakes and tortoises in personal baggage, failed to obtain the necessary permits, and failed to declare the shipments to customs and wildlife authorities. Payment for the smuggled animals was frequently made by wire transfers of funds from Canada to the U.S. and from the U.S. to Europe. The smuggled reptiles include the Madagascar tree boa, spider tortoise, and radiated tortoise . . . each protected under the Convention on International Trade in Endangered Species and Wild Fauna and Flora (CITES). . . . The radiated tortoise is also . . . on the U.S. Endangered Species List. . . . The most recent smuggling attempt occurred at the Orlando International Airport August 13 when Federal officials discovered 61 Madagascar tree boas and 4 spider tortoises concealed in the per-

sonal baggage of [a man] who had arrived from Germany. [A second man] was arrested near Orlando 2 days later when he was identified as an alleged participant in the smuggling scheme and the intended recipient of the tree boas and spider tortoises. The reptiles were seized by the Fish and Wildlife Service and are considered evidence in this investigation. They will be cared for until the trial concludes and efforts will be made to either return the reptiles to their native country or place them in a zoological breeding facility in the U.S. . . . The U.S. is the world's largest importer of wildlife and, in recent years, the demand for highly prized live reptiles has increased rapidly. According to the indictment, the individuals involved in the conspiracy smuggled and sold at least 94 Madagascar tree boas, 51 radiated tortoises, and 25 spider tortoises. The prices they received for the reptiles varied depending upon the availability of the species as well as the color, quality, and age of the particular animal. . . . An indictment is merely a formal charge that a defendant has committed a violation of Federal criminal law and every defendant is presumed innocent until and unless proven guilty. . . . General comments or observations concerning the content of the information should be directed to Craig Rieben (craig_rieben@mail.fws.gov) in the Office of Public Affairs." Forwarded by James N. Stuart, August 23, 1996.

Tangled tags

"It was not until mid-season (in the Gulf of California) this year that we learned that the plastic 'cow-ear' tags that we use may be contributing to turtle by-catch in gill nets of all mesh sizes. Through interviews with local fishermen, direct observations of turtles in fishing nets, and in-tank observations we have determined that tagged turtles may have a significantly higher probability of being captured in gill nets. . . . We immediately ceased our tagging activities and have begun a tag removal program with recaptured turtles. We are concerned that other turtle conservation programs that use a similar type of tag may be unknowingly contributing to the turtles' incidental capture, particularly in areas where gill nets are common." Wallace J. Nichols, Jeffrey A. Seminoff, Antonio Resendiz and Bety Resendiz. 2 September 1996. Wallace J. Nichols, School of Renewable Natural Resources-Wildlife Ecology, Biological Science East, The University of Arizona, Tucson, AZ 85721 <jnichols@ccit.arizona.edu> .

Most wood turtles probably illegal

Martin J. Rosenberg, Notes from NOAH, August 26, 1996: "The only way that a wood turtle can be classified as 'legal' is if documentation can be provided that the animal was collected legally. The documentation must consist of a permit which was specifically issued for the collection of wood turtles (a general fishing license is not adequate, according to the Law Enforcement Division of the U.S. Fish and Wildlife Service) as well as a paper trail from the collector to the ultimate buyer. If you obtained the wood turtles prior to the time they were protected, you must have documentation supporting the date and location of purchase. The poaching of wood turtles is receiving a great deal of attention from a variety of individuals and organizations, including law enforcement agencies. Now that Ohio cannot be used by the poachers as the source of their

illegally collected animals, it is unlikely that any wood turtles recently collected (that is, subsequent to their being protected in their state of origin) are legal. If you are offered a wood turtle or have an opportunity to purchase one, it would be unwise to purchase it, because you probably were offered an illegally collected turtle. And you would be doing the seller a favor by explaining to him or her why they shouldn't be selling wood turtles. To be on the safe side, and, more importantly, to help the natural populations survive in the wild, do not buy wood turtles." Department of Biology, Case Western Reserve University, Cleveland, OH 44106. Forwarded by A. Salzberg, 3 September 1996.

Frogs and toads of the Free State

"A user-friendly field guide to the frogs and toads of the Free State, province of South Africa, has just been released and is now available at a special price. Full details on this book including the cover, specifications, table of contents, color photos and an order form are available on the web: <<http://www.uovs.ac.za/natwet/dierk/anura/book>> Louis du Preez, Anura Study Group, Dept. of Zoology & Entomology, University of the Free State, P.O. Box 339, Bloemfontein, 9300, South Africa Tel: 27 51 4012370 Fax: 27 51 4488711. 26 August, 1996 <dedp@rs.uovs.ac.za> "

Feared dead, found alive

From an article in the *Tenerife News* as read on their website <<http://www.tennews.com>> (with photograph): "A species of giant lizard that experts believed to have died out some five hundred years ago is alive and well and living in north-west Tenerife. . . . The amazing discovery of Teno's 'living fossils,' direct descendants of the enormous *Galliota goliath* which once roamed Tenerife and measured one-and-a-half metres in length, was made by chance in one of the most precipitous and inaccessible areas of the island. . . . A search is to be launched to try to track down any similar colonies of reptiles which could have survived in this and other islands in the archipelago." From: Jaap van Wingerde <wingerde@knoware.nl> Internet: <<http://utopia.knoware.nl/users/wingerde/>> 26 October 1996.

The tragic end of 1,000 tortoises

29 October 1996, Ralph Tramontano wrote: "The *T. horsfieldi* incident was certainly a tragic affair. It all started (in Sweden at least) when a fellow named Amro Hassan applied for permission to import 1000. . . . This species' importation into the EU [European Union], however, is not permitted (an EU law in effect since 1988) so the application was turned down. Hassan nevertheless allowed the tortoises to be shipped to Sweden. According to . . . [a] spokesman for the Arlanda Customs office, Hassan had declared the tortoises . . . and so could not be accused of smuggling. The custom officials did not have the right then to confiscate the animals. It appeared that Hassan's naive strategy was that if the animals showed up somehow he would get them through. This in fact almost happened. The Swedish Board of Agriculture . . . has the right to determine what will be done with animals that 'get stuck' in the customs zone. They had initially applied for dispensation from the EU rule forbidding the import of *T. horsfieldi*, but

this was denied by Brussels. If this dispensation had been granted, the tortoises would still belong to Mr. Hassan, who would have then sold the survivors. He would have also succeeded with 'forcing' the animals through customs and opened the flood gates for this kind of exploitation. On the other hand the Swedish Board of Agriculture has the right to regulate the storage of animals under such circumstances, and they could have confiscated the tortoises on the grounds that they were being mistreated. The dispensation would then have allowed the tortoises to stay in Sweden without being forced onto the market. At this point in time I have not been able to find out what their plan was, but they have been asked. In addition to the EU prohibition, the EU rules also state that if the import of CITES-listed animals is not in order the only place the tortoises could have been sent would be back to the source country or the country issuing the export license. Once there it would be up to that country's officials to decide if Hassan would still be allowed to keep them. . . . In the meantime the tortoises were stored in inadequate facilities (SAS's cargo storage space) because adequate ones did not exist at the airport. . . . However, the Swedish Board of Agriculture, as stated, has the right to regulate the storage of animals under such circumstances, and there was nothing stopping them from contacting groups such as the National Swedish Herpetological Society (SHR) for help. We have 250 members within a half-hour of Arlanda who could have rapidly arranged suitable quarters for the tortoises. Contrary to what has been circulating on the Internet, the tortoises were inspected by two herpetologists . . . (chosen by the herpetological community, not the government) and a veterinarian. I have spoken to both and was told that they did not find the animals to be in very good condition. Many were injured, probably by the way they were stored before they were shipped at least two weeks ago. It appears that these tortoises have been in captivity for as long as 8 months already, waiting for a buyer (according to the Swedish Board of Agriculture they were allegedly involved in a confiscation in Russia as long ago as April, which suggests that sending them back there, from where they were exported last, might not have been the best way to ensure their survival). . . . Those that I've spoken to at the Swedish Board of Agriculture felt that the animals had already suffered considerably and that their return to the source land was problematic at best. Therefore they decided that the best course of action was to destroy the animals to end their suffering. They have expressed skepticism toward the possibility of repatriating the tortoises back into the wild, assuming that it would never work (although they have virtually no expertise in this field), in part because it was felt that it would be impossible to ascertain exactly where the animals came from. They have also expressed skepticism towards the possibility of anyone being able to find a suitable storage locality either here or in another country in a reasonable amount of time. . . . I do not agree with these objections to making an attempt to save the tortoises. The Swedish Board of Agriculture could have confiscated the tortoises on the grounds that they were being mistreated, eliminating the ownership problems . . . and then enlisted the help of e.g. SHR to help arrange suitable care for them. The bureaucratic problem of where they would go next would still be here, but at least some of the tortoises would

still be alive. . . ." <Ralph.Tramontano@zooekol.lu.se>
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Horned Lizard Subject of Lawsuit

"In an attempt to protect a declining desert reptile species, several groups recently brought legal action against the U.S. Fish & Wildlife Service and Interior Secretary Bruce Babbitt. The Tucson Herpetological Society, along with Defenders of Wildlife, the Horned Lizard Conservation Society, and a THS member, filed suit in early September over the government's failure to list the flat-tailed horned lizard (*Phrynosoma mcallii*) as a Threatened or Endangered species under the Endangered Species Act (ESA). The suit is simple: the government is required by the ESA to make a decision on listing within one year of an official proposal to list. On November 29, 1993, they published in the Federal Register a proposal to list the species as Threatened. More than two years later, they have never finalized that listing and the species remains largely unprotected. Beyond that procedural issue is a very real conservation issue. The flat-tailed horned lizard has lost a large part of its habitat throughout its limited range in Arizona and California due to off-road vehicles, agriculture, suburban sprawl, military activities, and other human behavior. Remaining populations have been isolated from each other and the habitat fragmentation continues. According to [USFWS], about 95% of the remaining optimal habitat in California is threatened by one or more factors. Monitoring efforts have documented recent population declines in at least one area of optimal habitat. Without federal protection the species will almost surely continue to decline, perhaps to extinction in this country. The suit asks for a court-ordered listing of the species and for protection of its habitat. Updates and photos can be found on the THS web site: <<http://www.azstarnet.com/~bsavary/announce.html>>." Roger A. Repp <reptech@juno.com> President, Tucson Herpetological Society.

Georgette?

"For several years now I have been reading about the sad case of 'Lonesome George' the last Galapagos tortoise from Pinta Island, the northernmost of the Galapagos Islands. The latest article describes how Edward Louis, a geneticist at the Henry Doorley Zoo in Omaha, Nebraska, has spent the last eight years searching zoo collections around the world—so far in vain—for a mate for LG. Unfortunately, from the article, it sounds as though LG is in rather poor condition for mating. I am quite out of my depth in the field of genetic engineering, so I have a few questions that I hope someone can answer. Is it theoretically possible to clone Lonesome George? What would it cost to accomplish this? As I understand it, the zygote from the fertilized egg of a commoner subspecies of Galapagos tortoise could be replaced with a body cell from LG. By incubating a series of these clones at different temperatures Georges and Georgettes should result. Crossing these back with the most closely related Galapagos tortoise subspecies and then releasing the offspring and the clones back on to Pinta Island could save the Pinta subspecies from complete extinction—n'est pas? One would think that the individuals from the

original population of Pinta Island tortoises would have likely all been very similar genetically even when they were much more abundant. It seems to me that if some private or governmental agency is going to pursue the development of the technology of cloning, then they may as well focus their research on problems that maximize the benefits from their experimental results. . . .” Stan A. Orchard 28 Oct 1996 <sorchard@islandnet.com>

Death toll mounts in Australia

“Australian scientists have reported that the major cause of loggerhead turtle mortality on Queensland’s east coast is incidental capture in fishing apparatus, particularly shrimp trawl nets. International and Australian turtle biologists and population modellers have reported that the ‘loss of only a few hundred subadult and adult [loggerhead] females each year could lead to extinction of the eastern Australian loggerheads in less than a century’ (Heppell et al. 1996. Population Model Analysis for the Loggerhead Sea Turtle, *Caretta caretta*, in Queensland. Wildlife Research 23:143). . . . Research shows that loggerheads have the highest mortality in the Northern Prawn Fishery (19.2 percent) and a relatively high catch rate (15 percent). The total annual capture reported is about 5,500 animals a year. The Queensland Department of Primary Industries research shows loggerheads have the highest capture rate (50.4 percent) in the East Coast Otter Trawl Fishery. The east coast data do not show turtle mortality to species. The total annual capture reported for this fishery is about 5,300 animals a year. . . . If we use the best available information loggerhead mortality at 19.2 percent of 2,500 turtles/year equals 480 dead loggerheads a year in northern and eastern Australia. This figure obviously excludes other causes of anthropogenic mortality. If we go back to the statement that ‘the loss of only a few hundred subadult and adult [loggerhead] females each year could lead to extinction of the eastern Australian loggerheads in less than a century’ things are grim for loggerheads and community and aboriginal groups are rightly concerned. The Queensland Government is required to have a Turtle Conservation Plan under the Nature Conservation Act. Unfortunately there is no such plan. Similarly, the Australian Government is required to have a Turtle Action Plan under the Endangered Species Protection Act. Unfortunately there is no such plan.” 8 Nov 1996. Anne Reynolds <mccnnt@PEG.APC.ORG> Marine and Coastal Community Network. Ocean Rescue 2000.

Community helps turtles

“Although development and ecotourism continue to increase in the communities surrounding the Las Baulas National Park, Guanacaste, Costa Rica, recent efforts have been made by local communities, the Costa Rican government, and international researchers to save the largest leatherback nesting colony in the Pacific Ocean. . . . The nearby tourist town of Tamarindo celebrated the opening of the turtle season with ‘Dia de las Baulas.’ The highlight of this event was the painting of the streetlight shades so that the streetlights would shine on the streets and be less visible to adult and hatchling leatherbacks on the nearby beach. . . . A slide show and discussion on leatherback turtles and the effect of lights on nesting behavior

and hatchling orientation . . . was presented to the business community to convince them to reduce the lights. . . . Most of these individuals were unaware that their lights could negatively impact the resource upon which their businesses depend. That evening we witnessed a near 50 percent reduction in lights coming from Tamarindo! The Costa Rica National Park Service has committed more resources towards developing Las Baulas NP this year. . . . Lastly, the beer company Guinness PLC has donated \$18,000 . . . to develop park infrastructure near the beach. A park information center will be built in December of this year at the main entrance to the park. Another information center is planned to be built at the secondary park entrance on the Tamarindo side of the park in 1997/1998. These information centers will provide the thousands of tourists that visit the park weekly with information regarding the biology, ecology, and conservation of leatherback turtles.” 16 November 1996, Pamela Plotkin <plotkipt@dunx1.ocs.drexel.edu>

I didn’t know this one

U.S. Postal standard C022.3.2 “Small, harmless, cold-blooded animals (except snakes and turtles) that do not require food or water or attention during handling in the mail and that do not create sanitary problems or obnoxious odors are mailable (e.g. baby alligators and caymans not more than 20 inches long, bloodworms, earthworms, mealworms, salamanders, leeches, lizards, snails and tadpoles).” Scott Solar, Reptilia Technologies, P.O. Box 11, Chino, CA 91708. 29 October 1996

Name withheld to protect the funny

22 August 1996 AP wire San Diego - “A 2.7-meter Burmese python bit a pregnant woman in her bed in a hotel room yesterday, then wrapped itself around her and her husband before rescuers killed the family pet.” Reply: “Why not just saw the heads off of the couple to save the snake. At least that way the Global Average IQ would go up.”

To contribute to this column send newspaper clippings with the date/publication slug and your name firmly attached to each sheet to: Ellin Beltz, 1647 N. Clybourn Avenue, Chicago, IL 60614-5507 or letters only to E-mail <uebeltz@uxa.ecn.bgu.edu>. Next month regular format resumes *and* I’ll announce the winners of several nifty little gifts for: first receipt of herp stamps (still missing the San Francisco garter snake) and random pull from all contributors’ names for 1996.



The Phib File

Amphibian Q&A

by Dave Golde

Working in pet stores for several years, I am often asked questions pertaining to amphibians. Below are a couple of the more commonly asked amphibian questions.

Keeping Tiger Salamanders

What is the best way to keep waterdogs (*Ambystoma tigrinum* larvae) when they turn into salamanders?

I have found that simple plastic under-bed storage boxes work extremely well for housing adult tiger salamanders (*Ambystoma tigrinum*). The boxes I use for my tigers are 2' x 1½' x 6" with about two dozen quarter-inch holes drilled in the lid, and another few dozen beneath the lip of the box. As a substrate I use about three inches of humus-rich soil straight from the forest floor. Using soil from the forest floor, or from any other humus-rich nonpolluted area, is actually better than using pulverized topsoil or potting soil. Natural soil contains small insects, nonparasitic nematodes, microorganisms and bacteria that actually benefit the salamanders by breaking down waste quickly and efficiently before it festers or grows mold. Adding earthworms to the substrate also aids in breaking down waste. This system works much like the under-gravel filters often used in aquariums. To finish off the salamander box, just add leaf litter and a few bowed pieces of wood or bark for hiding spots.

This type of setup has worked flawlessly for me with eight eastern tiger salamanders for eight months straight. I have not come across any mold or infections. All the setup requires is a fresh layer of leaves every few weeks and a good tilling every couple months.

The entire box should be kept at around 65°F (a basement floor may be ideal). The average sized tiger should be offered the equivalent of one large nightcrawler a week (about half a worm every three days) either from fingertips or forceps, as tigers seem to have difficulty capturing large worms. Crickets and/or waxworms should be tossed in occasionally (once a week) to add variety to the diet. The setup should be lightly misted once a week. I say once a week because evaporation within the box should be minimal and tigers like the soil somewhat dry. A properly maintained tiger should normally appear to have a light dusting of soil. If kept in excessively wet or

damp soil infections will set in and fungus and mold will grow.

True, a salamander box does not allow you to clearly view your salamanders. But any tiger salamander properly housed in a tank should be hiding 90% of the time anyhow. In a tank light levels and normal human activity may make a tiger nervous, in which case it will hide and only come out for food. I find that my tigers are almost always out and about in their box whenever I lift the lid, most likely because the dim and slightly humid environment within the box is very favorable to them. My tigers eagerly accept food from my fingertips and one individual will actually climb into my lap or onto the floor to get his worm. This setup has worked wonderfully for my guys and I strongly recommend it for yours.

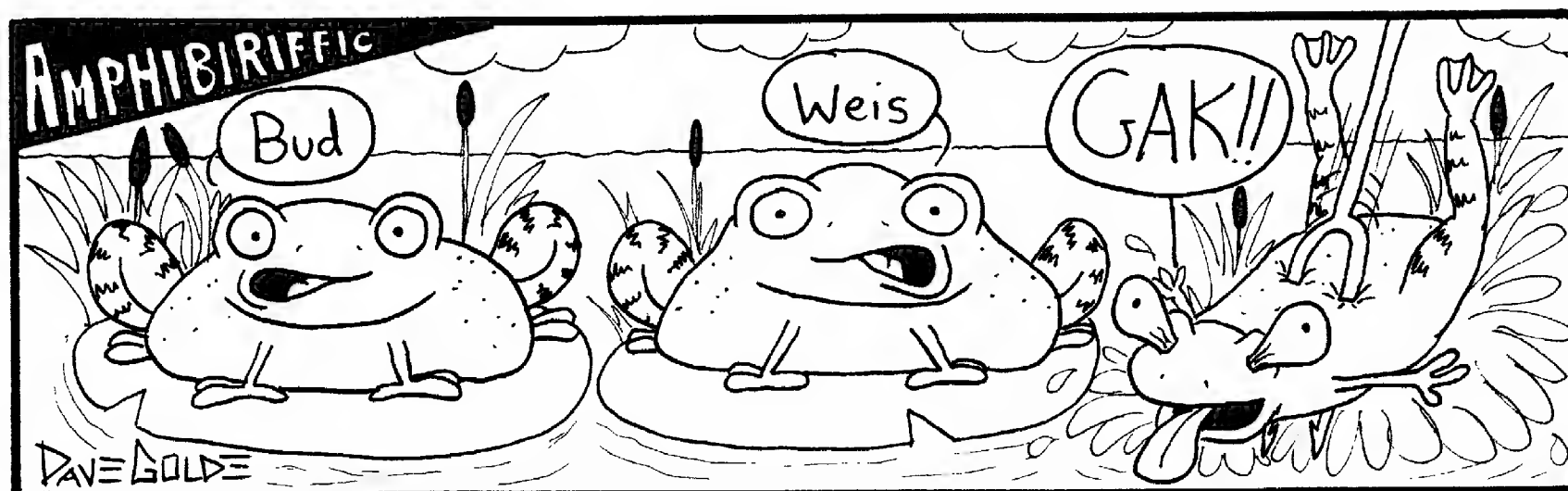
It should be duly noted that the salamander box has also worked efficiently for American toads (*Bufo americanus*), and for salamanders such as the blue-spotted (*Ambystoma laterale*), marbled (*A. opacum*), spotted (*A. maculatum*), slimy (*Plethodon glutinosus*), and redback (*P. cinereus*). Kept in a salamander box, I find that salamanders can be easy to care for and rewarding specimens.

Amphibians in Aquaterrariums

With all the aquaterrariums and easy-to-assemble aquaterrarium kits now on the pet market, I am often asked the following question. What exactly are the best types of amphibians to put in a community aquaterrarium?

As a general rule it is not a good idea to mix amphibians or fish from different continents, or even from widely separated areas of the same continent. Even a healthy animal is likely to carry certain parasites, microbes, bacteria, and funguses that are completely harmless to it. But to an amphibian from a different continent these organisms may prove very detrimental or even deadly. As an example, a northern leopard frog (*Rana pipiens*) may naturally carry and be immune to a certain strain of *Aeromonas* bacteria. If that frog is placed in the same terrarium as a White's treefrog from Australia that has no immunity to that particular strain of *Aeromonas*, chances are the White's treefrog will become infected with red-leg and die.

Amphibians from similar habitats (e.g., arboreal, terrestrial, aquatic) may also be a poor risk to keep together. They have a



tendency to pile up in the most favorable corner or hiding spot, exchanging skin secretions which could seriously afflict or kill any of the amphibians involved. However, diurnal and nocturnal animals that use the same habitat may be housed together because they will normally keep out of each other's way.

Amphibians of greatly different sizes should never be kept together. Remember the basic philosophy of amphibians, "If it's smaller than me, and it moves, it's food!"

If highly terrestrial amphibians are being included in your aquaterrarium it is a good idea to put logs or rocks in the corners of the aquatic side, and to give the shoreline a gentle slope. Many frogs, toads and salamanders can easily exhaust themselves and drown by struggling to get out of the water in a corner, or against a divider. A screen lid should always be used or the humidity will be entirely too high. Adequate cage furnishings must be provided for each type of amphibian.

The following is a listing of some commonly available amphibians you can put in an aquaterrarium. The amphibians are listed under regions of origin. Note that some species, such as the pickerel frog (*Rana palustris*) and the wood frog (*Rana sylvatica*) in Illinois, may be locally protected. Habits and habitats are noted by the following codes: **D** = diurnal; **N** = nocturnal; **AR** = arboreal; **T** = terrestrial; **AQ** = aquatic; and **SA** = semiaquatic. Example: DAR indicates the amphibian is diurnal and arboreal.

Eastern U.S.

Eastern newt (*Notophthalmus viridescens* ssp.) DSA
Dwarf siren (*Pseudobranchius striatus* ssp.) DAQ
Mole salamanders (*Ambystoma* spp.) NT
Dusky salamanders (*Desmognathus* spp.) NSA
Brook salamanders (*Eurycea* spp.) NSA
True toads (*Bufo* spp.) NT
Spring peeper (*Pseudacris crucifer*) NAR
Gray treefrog (*Hyla versicolor/chrysoscelis*) NAR
Squirrel treefrog (*Hyla squirella*) NAR
Green treefrog (*Hyla cinerea*) NAR
Barking treefrog (*Hyla gratiosa*) NAR
True frogs (*Rana* spp.) DSA

Western U.S.

Rough-skinned newt (*Taricha granulosa*) NSA
Giant salamanders (*Dicamptodon* spp.) NT
Mole salamanders (*Ambystoma* spp.) NT
Ensatina (*Ensatina eschscholtzii* ssp.) NT
Pacific treefrog (*Hyla regilla*) NAR
True frogs (*Rana* spp.) DSA
True toads (*Bufo* spp.) NT

Europe

Crested newt (*Triturus alpestris*) NSA
Marbled newt (*Triturus cristatus*) NSA
Green toad (*Bufo viridis*) NT
Common toad (*Bufo bufo*) NT
European treefrog (*Hyla arborea*) NAR
Mediterranean treefrog (*Hyla meridionalis*) NAR

Eurasia

Russian fire-bellied toad (*Bombina bombina*) DSA

True frogs (*Rana* spp.) DSA
Green toad (*Bufo viridis*) NT

Asia

Fire bellied-newts (*Cynops* spp.) NSA
Warty newts (*Paramesotriton* spp.) NSA
Oriental fire-bellied toad (*Bombina orientalis*) DSA
Malayan narrow-mouthed toad (*Kaloula pulchra*) NT
Flying frogs (*Polypedates* spp.) NAR
Gliding frogs (*Rhacophorus* spp.) NAR
Black-spined toad (*Bufo melanostictus*) NT
True frogs (*Rana* spp.) DSA

Central and South America

Rubber eels (aquatic caecilians) (*Typhlonectes natans*) NAQ
Palm salamanders (*Bolitoglossa* spp.) NAR
Eleutherodactylids NT
Treefrogs (*Hyla* spp.) NAR
Red-eyed treefrog (*Agalychnis callidryas*) NAR
Monkey frogs (*Phyllomedusa* spp.) NAR
Surinam toads (*Pipa* spp.) DAQ
Marsupial treefrogs (*Gastrotheca* spp.) NAR
Paradox frog (*Pseudis paradoxa*) DSA

Africa

Reed frogs (*Hyperolius* spp.) NAR
Crevice creepers (*Phrynomerus* spp.) NT
Running frogs (*Kassina* spp.) NT
Clawed frogs (*Xenopus* spp.) NAQ
Dwarf clawed frogs (*Hymenochirus* spp.) NAQ
True frogs (*Rana* spp.) DSA
Green toad (*Bufo viridis*) NT

Madagascar

Mantellas (*Mantella* spp.) DT
Hoppers (*Scaphiophryne* spp.) NT
Tomato frogs (*Dyscophus* spp.) NT
Treefrogs (*Boophis* spp.) NAR

Australia

Australian treefrogs (*Litoria* spp.) NAR

Thorough research on the husbandry of each species is necessary to be sure they can withstand similar conditions before putting them together. No amphibians of the same habits and habitat should be mixed. No amphibians from different regions should be mixed. Generally only two specimens of each species chosen should be added to the tank per ten gallons of room. Feeding should be attempted at a different time each day so all the amphibians will have an equal opportunity to get their fill. If properly maintained, a community aquaterrarium can support a diverse variety of herps and fish all in one problem-free miniature ecosystem.

Do you have an amphibian related question? Possibly something you have learned about amphibians, captive or wild, that you think would interest others? Comments about the column? Interested in the Amphibian Club? Cartoon ideas? Anything amphibian related? Write or call me, Dave Golde, 4506 Howard Street, Skokie, IL 60076, (847) 679-1530. Thanks!

Herpetology 1997

In this column the editorial staff presents short abstracts of herpetological articles we have found of interest. This is not an attempt to summarize all of the research papers being published; it is an attempt to increase the reader's awareness of what herpetologists have been doing and publishing. The editor assumes full responsibility for any errors or misleading statements.

PIGMY RATTLESNAKES IN CENTRAL FLORIDA

P. G. May et al. [1996, Copeia (2):389-401] censused a dense population of *Sistrurus miliarius barbouri* in central Florida for three years. In 353 visual censuses of an isolated area of semideciduous forest, they recorded 5389 sightings of pigmy rattlesnakes (initial captures and recaptures). Warm winter temperatures allowed individual snakes to remain active throughout the year. They found high between-census variability in the abundance of pigmy rattlesnakes (individuals seen per observer hour) during all seasons. Highest levels of abundance were associated with periodic flooding of the habitat. Individuals were found above ground at air temperatures ranging from 14 to 32°C. The cloacal temperature of captured individuals ranged from 15 to 37°C. The microsites used by pigmy rattlesnakes averaged 0.4°C above surrounding surface temperatures, whereas snake cloacal temperatures averaged 1.9°C above ambient air temperatures. Although pigmy rattlesnakes typically were passive when approached, individuals with higher body temperatures and those that were uncoiled were more likely to strike than cooler or coiled snakes. The proportion of young-of-the-year *S. m. barbouri* in the surface-active population was greatest during the winter and in August when parturition occurs. The sex ratio of above-ground snakes did not vary significantly among months and did not differ significantly from a 1:1 ratio. Ecdysis occurred in all months, with no significant differences between months in proportion of snakes pre-ecdysis. Prey capture also occurred in all months of the year but was lowest in the winter. Most snakes were coiled when found; the proportion of snakes that were moving when encountered varied significantly among seasons, with peaks of movement in spring and fall. Seasonal changes in surface use and activity of this population of snakes were far less influenced by thermal constraints than those of snake species found in more temperate areas.

RAZORBACK MUSK TURTLE BASKING

P. V. Lindeman [1996, Herpetological Nat. Hist. 4(1):23-34] observed basking razorback musk turtles, *Kinosternon carinatum* (= *Sternotherus carinatus*), during replicated spot-scope surveys of the turtle fauna of the Pearl and Pascagoula River drainages in Mississippi and Louisiana. Razorbacks were seen more frequently and at more sites in the Pearl drainage, and formed a higher proportion of the total number of turtles seen there (5.5%, vs. 1.1% for the Pascagoula drainage). Razorbacks usually basked in direct sunlight, often climbed high onto steeply angled branches of small diameter, and showed a propensity for basking on substrates not occupied by other turtles. Comparison of basking-substrate attributes for *K. carinatum* with similar data for *K. odoratum* (= *Sternotherus odoratus*) and *K. subrubrum* in Kentucky showed *K. carinatum* to be more similar to its closer relative, *K. odoratum*, in basking-substrate choice.

LIFE ON THE LOWEST BRANCH

R. Shine et al. [1996, Copeia (2):290-299] measured and dissected 144 twig snakes (*Thelotornis capensis*) from southern Africa, acquiring data on morphology, sexual dimorphism, food habits and reproductive biology of this species. Twig snakes are extremely elongate arboreal snakes that remain immobile for long periods and ambush passing vertebrates. Both sexes attain sexual maturity at about 60 cm snout-vent length (SVL), at around three years of age. Maximum size is about 80 cm SVL in both sexes, and this lack of size dimorphism is consistent with published reports of male-male combat in this taxon. Males have longer tails, smaller heads, and thinner bodies (and hence, weigh less) than do females at the same body length. Reproductive cycles are highly seasonal in both sexes. Testes in adult males are turgid in spring (the mating season) but flaccid over most of the rest of the year. Females undergo vitellogenesis in spring, ovulate in late spring, and oviposit in summer. Clutch sizes ranged from 4 to 7 eggs, with a mode of 6. The diet of *T. c. capensis* is diverse: of 56 prey items, most were lizards (63%), frogs (27%), and snakes (8%). Only a single bird was recorded in a dissected twig snake. Approximately half of all prey items were arboreal taxa (e.g., chamaeleons, dwarf day geckos), with the rest being terrestrial in habit (e.g., brevicedid frogs). Thus, we infer that *T. capensis* often forages from a relatively low perch, which enables it to detect and seize terrestrial as well as arboreal prey. An ontogenetic increase in the proportion of terrestrial prey was evident, but even the largest snakes took many arboreal prey items. Larger snakes took larger prey, and the relationship between prey size and snake body length differed between the sexes, in concert with the observed sexual dimorphism in relative head size. The results of the study generally agree with those of previous studies on the biology of twig snakes; the most surprising result is that a snake with extreme morphological and behavioral modifications for arboreal life nonetheless feeds to a large degree on terrestrial prey.

A NEW SPECIES OF GLASS FROG FROM BOLIVIA

M. B. Harvey [1996, Herpetologica 52(3):427-435] describes *Cochranella nola*, a new species from semi-deciduous forests near Samaipata, Santa Cruz, Bolivia. It is the most southern Andean member of the genus *Cochranella*. The new species is most similar to *C. spiculata* and *C. tangarana*, from which it differs in color, distribution of melanophores, spiculation, and prominence of the tympanum. The author also reports on a large series of males and females of *Cochranella bejaranoi* from two localities near the border of Santa Cruz and Cochabamba, Bolivia. He finds that reported differences between the holotypes of *C. flavidigitata* and *C. bejaranoi* are the result of sexual dimorphism and individual variation. On this basis *Cochranella flavidigitata* is synonymized with *C. bejaranoi*.

INSIGHT INTO THE EVOLUTION OF VIVIPARITY

M.-J. Arrayago et al. [1996, *Herpetologica* 52(3):333-342] note that the lizard *Lacerta vivipara* exhibits both oviparous (egg-laying) and viviparous (live-bearing) modes of reproduction. Hybridization cannot occur in nature because oviparous populations are isolated in the extreme southwestern part of the distributional range. Hybridization experiments (oviparous $\times$ viviparous, F_1 , F_2 , and back-crosses) enabled an analysis of the degree of reproductive isolation between viviparous and oviparous populations and also provided insight into the evolution of viviparity. The authors observed sterile eggs and embryonic mortality in both normal and hybrid crosses. Comparative analysis of breeding success failed to demonstrate clear-cut reproductive isolation between oviparous and viviparous strains. This incomplete reproductive isolation agrees with previous genetic studies, which indicated that the two reproductive strains are closely related. Hybrid females (F_1) laid eggs with an incompletely calcified eggshell. The stages of embryonic development at egg-laying in hybrid females were intermediate (stages 35-36), between those in oviparous populations (stages 31-34) and in viviparous females (final stage = 40). Incubation duration was shorter for eggs of the hybrids than for normal oviparous eggs. The hybrid strain is thus an interesting, although artificial, illustration of the classical model for evolution of viviparity in reptiles: it occupies an intermediate stage on the oviparous–viviparous continuum, and it supports predictions of eggshell regression, more advanced embryonic development at egg-laying) and shortening of incubation. The intermediate reproductive phenotype of first generation hybrids indicates that transmission of reproductive mode is not dominant–recessive. However, more research (on F_2 hybrids) is needed before one can assert whether reproductive mode behaves like a Mendelian or a polygenic character.

VARIATION IN SNAKE TEETH

B. A. Young and K. V. Kardong [1996, *Amphibia–Reptilia* 17(3):261-276] report that the complexity of snake tooth morphology is more varied than has been recognized in functional, evolutionary, or taxonomic studies. The authors surveyed a broad sample of species across taxonomic groups to document and summarize the variation present. The survey included a scoring of dentitional features of 1169 specimens representing 611 species of snakes on four dentiferous bones (dentary, pterygoid, palatine, maxilla). Besides presence or absence of teeth on these bones, they ranked the tooth type on each bone into one of four categories: basic, furrowed, grooved, or hollow. Basic teeth, without surface recesses or grooves, were the most common tooth type. Hollow teeth (fangs) were found most commonly on the maxilla and grooved teeth were often adjacent. Grooved teeth, when present, were found only on the maxilla although teeth with furrows, shallow creases in the surface enamel, were found in low numbers on the dentary, pterygoid and palatine. Teeth exhibited further specializations, including multiple grooves, basal reinforcing ridges, development of a blade-like design, variation in the degree to which the secondary groove in hollow teeth might be in evidence, and variation in the position of the groove along the shaft of the tooth.

EVOLUTION OF THE COLUBRID SNAKE TRIBE LAMPROPELTINI

J. S. Keogh [1996, *Herpetologica* 52(3):406:416] used morphological characters drawn from soft anatomy, squamation, and the literature to construct a phylogenetic hypothesis for the New World colubrid snake tribe Lampropeltini. The tribe includes *Arizona*, *Cemophora*, *Lampropeltis*, *Pituophis*, *Rhinocheilus* and *Stilosoma*. North American species of *Elaphe* are also part of this radiation. A number of Old and New World colubrid species were used as outgroups. Lampropeltini is defined by a single synapomorphy, the presence of an intrapulmonary bronchus which is lacking in all outgroup species and in *Senticolis*. The analysis suggests the following relationships: (New World *Elaphe* + (*Bogertophis* + (*Pituophis* + (*Arizona* + (*Lampropeltis* + *Rhinocheilus* + (*Cemophora* + *Stilosoma*)))))). The recently described monotypic genus *Senticolis* is removed from the tribe Lampropeltini and placed in the tribe Colubrini. The author notes that it is still not clear which of the Eurasian species of *Elaphe* are most closely related to New World species. He speculates that a generic level distinction of New World and Old World *Elaphe* may be warranted. Any Old World *Elaphe* that may be closely related could be included in the Lampropeltini, but this action would be premature without a complete revision of the genus.

PETF AND SICS IN TWO GECKO SPECIES

W. E. Cooper, Jr., et al. [1996, *Amphibia–Reptilia* 17(3):217-231] assessed poststrike elevation in tongue-flicking rate (PETF) and strike-induced chemosensory searching (SICS) experimentally in two species of gekkonoid lizards belonging to families differing in foraging mode. PETF is an increase in rate of lingual protrusions after a prey item has been bitten and escapes or is removed from the mouth of a squamate reptile, whereas SICS is PETF combined with locomotory searching behavior. *Eublepharis macularius*, the leopard gecko, is an actively, albeit slowly, foraging eublepharid. This species exhibited PETF for a duration of about five minutes based on total lingual protrusions. Labial-licks were initially much more frequent than tongue-flicks. A substantial increase in movement occurred during minutes 5–8, hinting that SICS might be present, but was not quite significant. SICS is likely present, as in other actively foraging lizards, but was not conclusively demonstrated. Handling the lizards induced increased locomotion in both the experimental condition and a control condition, presumably accounting for the apparent delay in onset of increased movement. The tokay gecko, *Gekko gecko*, a gekkonid ambush forager, performed no tongue-flicks, but exhibited PETF based on labial-licks during the first minute. SICS was absent. These findings support the hypothesis that SICS is absent in ambush-foraging lizards, which do not use the lingual–vomeronasal system to search for prey. They are suggestive, but equivocal regarding the hypothesis that SICS is present in actively foraging lizards that exhibit linguallally mediated prey chemical discrimination. The finding of PETF in *G. gecko* suggests that this species and several iguanians previously found to increase rates of labial-licking after biting prey may be able to detect prey chemicals.

NEW GENUS FOR A RARE MALAGASY BLIND SNAKE

V. Wallach and I. Ineich [1996, J. Herpetology 30(3):367-376] redescribe *Typhlops grandidieri*, a Malagasy blind snake known only from two syntypes collected in 1905, on the basis of external and internal morphology. They designate one specimen as the lectotype and describe the soft anatomy for the paralectotype. Certain features indicate a relationship to the Leptotyphlopidae, particularly *Rhinoleptus koniagui* (single anal shield, absence of tracheal lung, cranially located heart, highly vascularized right lung with type G bronchial foramina). On the basis of total evidence these characters are considered convergent; presence of maxillary teeth and a costal/vertebral ratio of 1.8 confirm membership in the Typhlopidae while other anatomical features suggest a relationship to *Rhinotyphlops simoni* (reduced head shields, T-0 supralabial imbrication pattern, horizontal cutting edge on rostral, attenuated body, long tail, absence of apical spine). Because of the mosaic of conflicting systematic characters, in conjunction with unique cephalic papilla-like projections, *Xenotyphlops* gen. nov. is proposed to accommodate the species *T. grandidieri*.

RESISTENCE TO FREEZING IN SPRING PEEPERS

T. A. Churchill and K. B. Storey [1996, Copeia (3):517-525] monitored the effects of freezing on organ metabolism over a 36-h time period at -4°C in spring-collected specimens of a freeze-tolerant frog, *Pseudacris crucifer*. Within 2 min after nucleation, glycogenolysis in the liver was activated as indicated by elevated levels of hexose phosphates; and levels of the cryoprotectant, glucose, rose quickly thereafter. Freezing stimulated a 3.3-fold increase in liver glycogen phosphorylase *a* activity, and a rapid phase of liver glucose production was maintained for at least the first hour of freezing ($21\ \mu\text{mol} / \text{g wet mass} / \text{h}$), followed by a steady rate of glucose increase of about $3\ \mu\text{mol} / \text{gwm} / \text{h}$. Final liver glucose levels reached $141\ \mu\text{mol} / \text{gwm}$ after 36 h. The results show a role for amino acids in anuran freezing survival and demonstrate that the biochemical mechanisms involved in controlling liver glucose output during freezing, previously described only for the wood frog, *Rana sylvatica*, are probably general mechanisms for regulating cryoprotectant pools in all freeze-tolerant anurans.

NINE NEW SPECIES OF *PROCTOPORUS* FROM ECUADOR

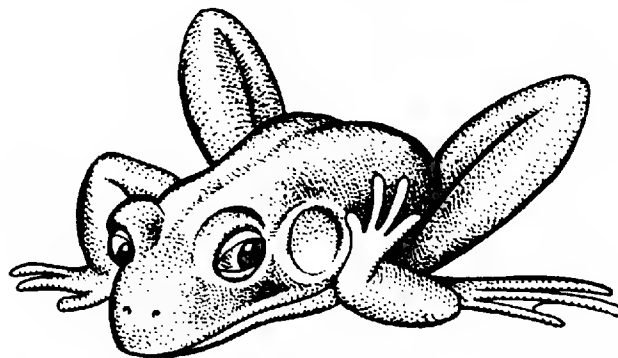
D. A. Kizirian [1996, Herpetological Monographs 10:85-155] reports that 16 species of *Proctoporus* (nine of them new) occur in Ecuador. Summaries of individual and geographic variation, distribution, figures, and a key to species are provided. Most species have restricted distributions; however, in some cases this may be an artifact of collecting. Species occupy narrow elevational zones, such as those documented in this paper along a transect across the Andean Cordillera of extreme northern Ecuador. There are seven possible or confirmed cases of sympatry among congeners. Morphological evidence suggests that species in sympatry may utilize different microhabitats. The new species are: *Proctoporus anatoloros*; *P. balneator*; *P. colomaromani*; *P. labionis*; *P. petrorum*; *P. raneyi*; *P. stigmatoral*; *P. vespertinus*; and *P. vietus*.

ARE LEATHERBACK TURTLES GOING EXTINCT?

J. R. Spotila et al. [1996, Chelonian Conservation and Biology 2(2):209-222] estimated the number of leatherbacks, *Dermochelys coriacea*, nesting on 28 beaches throughout the world from the literature and from communications with investigators studying those beaches. The estimated worldwide population of leatherbacks in 1995 was about 34,500 females on these beaches with a lower limit of about 26,200 and an upper limit of about 42,900. This is less than one-third the 1980 estimate of 115,000. Leatherbacks are rare in the Indian Ocean and in very low numbers in the western Pacific Ocean. The largest population is in the western Atlantic. The authors used an age-based demographic model to answer "what if?" questions about the stability of leatherback populations. They formulated a hypothetical life table model based on estimated ages of sexual maturity at 5 or 15 years. Leatherbacks that mature in 5 years would exhibit much greater population fluctuations in response to external factors than would turtles that mature in 15 years. Simulations indicated that leatherbacks would maintain a stable population only if both juvenile and adult survivorship remained high. If other life stages (egg, hatchling, juvenile) remain static, stable leatherback populations could not withstand an increase in adult mortality above natural background levels without decreasing. However, protection of eggs during incubation and hatchlings during their first day of life (potentially doubling survival) could have a significant effect on overall stability of leatherback populations in the face of an increase in adult mortality. Leatherback populations in the Indian Ocean and western Pacific Ocean cannot withstand even moderate levels of adult mortality. Even the Atlantic populations are being exploited at a rate that cannot be sustained. The authors conclude that leatherbacks are on the road to extinction and further population declines can be expected unless we take action to reduce adult mortality and increase survival of eggs and hatchlings.

P. C. H. Pritchard [1996, Chelonian Conservation and Biology 2(2):303-305] questions the assumptions and methodologies of Spotila et al. in nine specific areas. Based on the same global information on leatherback numbers and trends, Pritchard concludes that the leatherback is a vigorous and dynamic species, more flexible than cheloniid turtles in many ways (for example, in rapid maturation and in the ability to make substantial intraseasonal shifts in nest sites), and able to show quite rapid response to protection.

The Tympanum



I would like to respond to the letter from Mr. Joe Martinez, President of the New England Herpetological Society, in the Tympanum section of the September 1996 *Bulletin*. Mr. Martinez's letter commented on a long letter I had sent to Dr. Tom French, Assistant Director of the Massachusetts Division of Fisheries and Wildlife (DFW). An excerpt of my letter had been published in the April 1996 *Bulletin*.

Mr. Martinez asserts that it is "especially unfortunate" that readers may judge the DFW based on my writings which have been published in the *Bulletin*, on the Internet, and other forums. He makes a number of points in his letter, but most of them either support my main criticisms, or indicate that he didn't read my letter carefully.

Mr. Martinez mentions that the DFW changed its rules relating to herpetoculture in 1993. Actually, these changes were made in 1995. He emphasizes that, after these changes, "the opportunity for herpetoculture within the state has improved." I am not sure why he should imagine this would refute anything in my letter, since in the very first full paragraph of my letter I wrote: "I am aware that your Division amended your rules just a few months ago (July 1995), and those changes were well-appreciated." This compliment to the DFW was also included in the excerpt published in the CHS *Bulletin*, so I don't see how Mr. Martinez missed it.

However, while the rules have gotten better here, that is improvement from an abysmal base. If a student's grade average goes from an F to a D+, should we say "we are satisfied" with that?

I would ask neutral observers to examine Mr. Martinez's own letter to see an example of one of the main problems in our state: an all-but-fossilized regulatory apparatus. He apparently thinks it is praiseworthy that, in 1993, the DFW agreed "that changes to the 1976 legislation were in order." The new regulations were finally implemented in 1995. Simple arithmetic shows that is a full 19 years between rule changes, spanning the administrations of five different U.S. Presidents.

I strongly feel that a nearly two-decade wait between rule changes is grossly unacceptable. A field with such a rapidly-growing knowledge base and with such enormous and continuous improvements in husbandry requires far more frequent updating of its rules.

Mr. Martinez also appears to be impressed with the fact that the DFW's Dr. French "has indicated a willingness to consider future changes in the [restricted species] list." Pardon me, but that should go without saying. For him NOT to be willing "to consider future changes" would be almost criminally obtuse. Surely, what the DFW should have is a policy of regular policy reviews and updates—I would recommend one every 1–2 years, not every 15–20.

Speaking as an NEHS member, it has been a strange experi-

ence for me to see the reluctance of our organization to address my concerns about the state regs. I forwarded a copy of my original letter to our newsletter in February: I received no response of any kind from them (several other herp societies, including the CHS, asked me for permission to pub-

lish excerpts). Then, after the CHS published those excerpts, Mr. Martinez chose to respond here in the CHS *Bulletin*: he mentioned nothing about his complaints to me in an earlier correspondence we had via E-mail.

In his CHS letter, Mr. Martinez mentioned that the DFW had accepted "all of the recommendations" that the NEHS had made to them in the 1993-95 period. For some reason, the NEHS newsletter has never published those recommendations. Nor did the newsletter solicit suggestions from its membership while the rules-change process was open. I have requested a copy of those recommendations from Mr. Martinez (twice) and from the editor of the NEHS newsletter, but they seem unwilling to provide them to me. I would still like to see them.

This is important because I have spoken with many serious herpers—and NEHS members—here in Massachusetts, and we feel that we were in effect kept in the dark about the 1995 rules-changes until they were a fait accompli. It appears that only a small circle of NEHS insiders had their opinions considered, while the vast majority of the members were neither consulted nor kept informed. We feel this was a disservice to the general NEHS membership. We are trying to right that wrong.

I should point out to NEHS President Martinez that it is not just us "dissidents" who are dissatisfied with the state of the DFW rules. The Treasurer of the NEHS, Leslie Morrison (who is also an attorney) posted the following comments on the Internet a few months ago:

Feb. 22, 1996: I AM against the Mass. Permit system, which is mighty arbitrary and awfully hard to understand or comply with. As a result, it is widely disregarded, creating a huge population of herp felons. I also find the criteria for placing animals on the list baffling, and the alleged reasons for taking them off the list equally baffling.

Feb. 19: The people who are "in the know" on how to get a permit are NOT necessarily "in the know" about the animals. I, for example, am a lawyer, so I have some familiarity with the system and how to navigate it. Does that make me a talented cham. owner? You obviously don't think so. The problem is that the state does not follow its own guidelines. Permits are not given uniformly. I recently got some info from Tom French, the permit guru, which is not generally available to all permit applicants - this has only confirmed my feelings about the arbitrariness. Perhaps if you had to live in this state with this system for a while, you would understand the frustration. I certainly share your basic opinion that these animals should not be as freely available as they are, but I chafe under an oppressive and singularly difficult system.

Feb. 22: Also, as a side note, even DFW is often baffled about what is legal and what is not. A friend called about *Uromastyx*, and was told that they were legal. . . . Illegal animals are widely available in pet stores, and many people (present company includ-

ed) have purchased illegal animals, blissfully unaware of their complicity in a criminal venture.

When an attorney who is the Treasurer of the NEHS is fooled by the rules, to the point of unwittingly breaking the law, can any serious person doubt that those rules are confusing, and in need of revision?

(Interestingly enough, Ms. Morrison seems to have had a spectacular change of heart, and now vigorously defends the DFW on the Internet—even though those “oppressive and singularly difficult” policies remain completely unchanged. Some astute observers have ascribed her miraculous conversion to a single fortuitous incident: shortly before her praises began to appear, the DFW granted her a priceless permit to own helodermid lizards.)

Mr. Martinez didn’t even address the most immediate point of my letter: the contradictions between the DFW’s written rules, and the way they are enforced in the real world. I would be interested to know the position of Mr. Martinez, and the NEHS Board, on the following problems:

1) I have here on my desk the blank application form for a Class 4 herp license from the DFW. . . . They very prominently require an inspection of your “facility” by an “Environmental Police Officer” BEFORE you can apply for your license. However, my discussions with the DFW (and my own experience) indicate that they will never inspect your facility unless you want to own a permit animal that is more or less dangerous.

No reasonable person can deny that this police inspection requirement makes it less likely that a herper will apply for a license. How many herpers—heck, how many Americans?—do you imagine are perfectly comfortable inviting a police officer in to inspect a room inside their home? Isn’t it obvious that this police inspection requirement has caused many people to forego the permit process—but not the herp—altogether?

I see no reason why the police inspection should remain as is on the permit application. To the contrary, there is a compelling reason (to encourage permit compliance) to abolish it, at least for nondangerous herps. Does the NEHS leadership support this currently misleading “requirement,” or do they agree with me that it should be amended to reflect its real-world status?

2) The DFW’s Robert Arini, of their permit section, emphasized to me that a listed herp requires an “import permit,” in addition to the propagator’s permit. The import permit is supposed to ensure the “imported” [from out-of-state] animal is healthy. Tom French has written to me that the import permit is NOT required for herps. Does the NEHS leadership support abolition of the import permit for herps, or do they support the current contradictory policy?

My question to Mr. Martinez is very simple: Do you think the DFW should be consistent with its own policies, and not give different versions of those policies from day to day or person to person? I find it hard to imagine that the NEHS would support such a counterproductive and confusing approach.

Apart from these strictly procedural complaints against the DFW, I raised several substantive questions for them which they completely ignored. Perhaps Mr. Martinez will comment on the following illogical DFW policies:

- The DFW currently focuses on private herp-owners who apply for permits. Yet they do not inspect the facilities that arguably are the greatest source of inappropriately-placed and mistreated herps: ordinary pet shops! If the DFW began to focus on pet stores, a substantial portion of herp mistreatment would be cut off at the source, and there would be no question of invasion or infringement of privacy. Does the NEHS support such a shift in focus from private citizens to public, commercial facilities? If not, why not?

- The NEHS justifies its support of the DFW’s permit requirement by pointing to “impulse buying,” and its harmful effect on herps. Yet such herps as the green tree python, emerald tree boa, or pancake tortoises (all of which require a license here) cost hundreds of dollars for a single specimen. Will a person who is willing to spend that kind of money not make a serious effort to maintain the health of the animal? And if not, will the lack of a license prevent that type of person from buying one illegally?

If the NEHS really wants to reduce impulse buying by unqualified persons, wouldn’t it be more logical to require a license for such animals as green anoles, green iguanas, and red-ear sliders? Why pick on the higher-priced animals?

- The DFW currently claims that a turtle or lizard (nonvenomous) which is documented to be captive-born will be granted a license. Why doesn’t this “captive-born exception” extend to snakes? In other words, I can get a permit for a 7-foot water monitor if I can document it was captive-born, but I can’t get one for a two-foot green tree python from Eugene Bessette. Does that make any sense at all?

Oh, and the captive-born exception does NOT apply to “rare” native herps such as the wood turtle and eastern box turtle (I was turned down for these, even though I had well-established sources for captive-bred specimens). The DFW actually wrote to me that, if they allowed licenses for captive-bred native animals, it would encourage collectors to take them from the wild, to save money. As if someone who is inclined to illegally collect an animal from the wild would either be dissuaded or encouraged by my private permit for a captive-bred specimen!

Does the NEHS agree that the captive-born exemption should extend to nondangerous snakes and local herps? If not, why not?

- There continues to be a blanket DFW requirement for a permit for every species of chameleon and monitor lizard. We are now several years into a great explosion of husbandry knowledge on these animals, and many species are bred routinely in captivity. Shouldn’t the DFW amend its policies so as to use a little discrimination, and require permits for only those species which are genuinely delicate or endangered? This discrimination would have the beneficial result of steering people toward more hardy species of these lizards. Does the NEHS continue to support a blanket listing of all chameleons and varanids, and if so, why?

- The compliance rate (i.e., the number of people who have permits for their listed herps versus the number who don't) is abysmal — probably about 1–2%, and almost certainly not more than 5%. For those who think I am exaggerating the level of noncompliance, consider this: I recently purchased a nice cage from a fellow about 20 miles outside of Boston. I learned about the cage in the *WantAD*, and his ad also mentioned he was selling a savannah monitor. He didn't have a license. He said he had 6 or 7 friends who also had unlicensed monitors. My own conservative calculations, based on the *WantAD*, indicate that there are from 1,000 to 1,500 monitor lizards owned in Massachusetts. The DFW has informed me that there are 17 outstanding monitor lizard licenses in 1996. In other words, the compliance rate is something like 1–2%.

Even if we assume that every single monitor illegally owned in our state is advertised in the *WantAD*, then the compliance rate is only about 25% (17 legal owners and 52 illegal advertisers).

And what about other popular herps? Well, here are some figures I pried out of the DFW (it took 2½ months, 2 phone requests, and 2 written requests) for popular herp licenses in our state — in other words, the maximum number of legal owners (the actual number of owners might be LOWER, since one license can cover more than one listed herp species): true chameleons (all kinds), 7 licenses; green tree pythons, 3 licenses; emerald tree boas, 4 licenses; monitors (all kinds), 17 licenses; pancake tortoises, 0 licenses.

Needless to say, there are occasionally ads for chameleons in the *WantAD*, too. And considering that I personally know three people who own chameleons without a license, we can deduce that the compliance rate for chameleon-owners is probably similar to that of monitor owners — almost nil.

Given this situation, shouldn't the DFW take a more herper-friendly attitude, and rewrite its rules so that they are not confusing to attorneys and NEHS officers, let alone everyone else? Would the NEHS support such a rewrite? If not, why not?

I am not making these points to hurt anyone's feelings or reputation. I merely wish to demonstrate 1) that a genuine problem of restrictive, inconsistent, and confusing herp rules continues to exist in our state; and 2) the NEHS has not actively sought the input of its members when making its recommendations to change those rules, and has developed an insular, perhaps "out-of-touch" attitude as to what rules the membership would actually prefer.

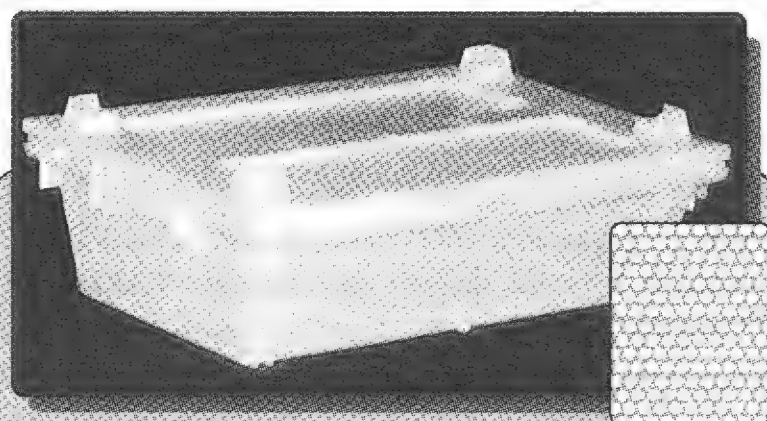
I hope Mr. Martinez, Ms. Morrison, and the rest of the NEHS leadership will take these suggestions to heart, in the spirit with which they are intended. We welcome an open and honest discussion with them on what rules still need to be changed, and how best to change them.

Philip Averbuck (Member, NEHS and CHS), 6D Locust Lane, Watertown MA 02172, E-mail: <PhilAver@aol.com> .

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Unofficial Minutes of the CHS Board Meeting, December 13, 1996

The meeting was called to order at 7:55 P.M. Board members Brian Jones and Jack Schoenfelder were absent.

Officers' Reports

The minutes of the November board meeting were read and accepted. The Treasurer's Report was reviewed and accepted. John Driscoll reported that current membership stands at 1328.

Committee Reports

1997 Reptile-fest: Lori King-Nava handed out a well-organized update packet on the status of the event. The committee will meet on a monthly basis until the show takes place, Memorial Day weekend at the Clarion O'Hare.

Sales: Jenny Vollman has the computer in her possession and is in the process of getting the inventory up to date. Sales will continue at the general meetings.

Library: Jenny Picciola reported that she and Jill Horwich still plan to come up with suggested revisions to the CHS Bylaws to enable more effective enforcement of the Library's rules on returning books.

Membership: A discussion took place regarding possible tactics for gaining new members.

Old Business

The schedule for 1997 meetings of the CHS Board of Directors is as follows: January 17; February 14; March 14; April 18; May 16; June 13; July 18; August 15; September 12; October 10; November 14; December 12. All meetings are scheduled to take place at the North Park Village Administration Building, 5801 N. Pulaski, Chicago.

It was brought up that the area codes on the CHS voice mail message need to be brought up to date ASAP.

New Business

Jenny Picciola will look into creating and maintaining a home page for the CHS on the World Wide Web.

Chris Lechowicz reported that Kara Tourville of the Chicago Academy of Sciences had called him to express thanks for our efforts at the 1996 HerPETological Weekend and to let us know that they wish to continue the tradition in 1997.

Round Table

Lori King-Nava showed the group a catalog that offered various nature-related products. Some of the items were disturbing to her and she wanted opinions from the board.

Jenny Picciola inquired about the possibility of obtaining her own key to the storage space at the Field Museum where the library is kept.

Chris Lechowicz bade the society and his presidential post a fond farewell as he and his wife Nicole are moving before the end of '96 to downstate Carbondale. He promised to try to

attend CHS events as much as possible.

On behalf of the CHS, the Board wishes Chris and Nicole all the best in their future endeavors. They will be missed by everyone.

The meeting adjourned at 9:30 P.M.

*Respectfully submitted by the Recording Secretary
Audrey Vanderlinden*

Answers to the December Herp-Acrostic

The quotation in last month's Herp-Acrostic was taken from page 122 of *A Naturalist in Florida* by A[rchie] Carr: "The song of the alligator is a vast, rumbling growl that rolls up through the mist of warm dawns like something half sound and half shaking of the earth. One alligator singing alone is a moving thing to hear. Three bellowing in chorus seem to take over the world...."

- | | |
|--------------------------------------|-------------------------|
| A. Amphiuma | M. Log tables |
| B. Cottonmouth | N. Indigo |
| C. At loggerheads | O. Sheath |
| D. Renew her winter
weeds outworn | P. Tom |
| E. Rinkhals | Q. In vivo |
| F. Angola | R. Nighthawk |
| G. Northern lights | S. Flagellum |
| H. Atoll | T. Lofting |
| I. Toothless | U. Orangethroat |
| J. Ugli | V. Rifle |
| K. Rhomb | W. Ives |
| L. AFH | X. Dogfish |
| | Y. A snake in the grass |

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**Chicago Herpetological Society
Statement of Income and Expense**

	1996		1995	
	INCOME	EXPENSE	INCOME	EXPENSE
Membership	28,743.30	1,587.03	36,672.00	3,007.33
Telephone	10.81	523.11		528.07
Membership List			43.00	221.14
Miscellaneous Postage		115.20		124.58
Monthly Programs		2,272.40		2,225.33
Supplies and Equipment		236.17		892.78
Books and Merchandise	25,498.49	23,040.04	53,500.94	47,341.66
Bulletin:				
Printing & Postage		21,789.34		28,666.42
Back Issues	37.50		134.50	
Advertising	1,844.50		915.66	
Raffle	954.50	29.02	2,032.50	
Board Meetings				60.00
General Meetings		2,880.00		1,505.00
CHS Live Animal Show	8,662.35	8,135.63	12,543.10	8,008.23
CHS Captive-bred Sale	3,045.00	2,538.65		
Workshops	45.00		135.00	
Shows	1,110.00	1,076.82	1,719.55	1,022.63
Grants	500.00	3,000.00	20.00	1,890.00
Donations	90.00	192.94	331.00	393.56
Refreshments	47.00		65.00	28.99
Library		351.15		
Miscellaneous		626.86	1.29	565.33
Interest	740.74		427.74	
Returned Checks		22.00		184.00
Insurance		826.00		826.00
Awards		250.00		211.55
'95 Midwest Symposium			16,001.00	10,393.11
	71,329.19	69,492.36	124,542.28	108,095.71

Cash as of 31 December 1995	\$40,926.81
1996 Income – 1996 Expense	1,836.83
Illinois sales tax collected in 1996	1,297.79
Illinois sales tax paid to state in 1996	(1,951.00)
Cash as of 31 December 1996	\$42,110.43

Advertisements

American Federation of Herpetoculturists: A nonprofit national membership organization of herpetoculturists, veterinarians, academicians and zoo personnel involved in the captive husbandry and propagation of amphibians and reptiles. Membership includes highly acclaimed magazine, *The Vivarium*, dedicated to dissemination of information on herpetocultural accomplishments, herp medicine, breeding and maintenance, field studies and adventures, enclosure design and much more. AFH membership is \$26. Send information requests to: AFH-News, P.O. Box 300067, Escondido CA 92030-0067.

For sale: rats and mice—pinkies, fuzzies and adults. Quantity discounts. Please send a SASE for pricelist or call Bill Brant, *THE GOURMET RODENT*, 6115 SW 137th Avenue, Archer FL 32618, (904) 495-9024.

For sale: murine-pathogen-free rats and mice available in all sizes, live or frozen: pinkies, fuzzies, crawlers, small, medium and large. Frozen crawler mice in lots of 2000, \$.17 each. Also available, full grown hairless mice. FOB shipping point. Master Card accepted. Call (518) 537-2000 between 8:00 A.M. and 5:00 P.M. or write SAS Corporation, 273 Hover Avenue, Germantown NY 12526 for prices and additional information.

For sale: high quality feeder mice. Shipped UPS Next Day Air. All mice are properly processed to insure a quality product. Fourth year of production and supply of frozen feeder mice. Prices: pinks, \$25/100; fuzzies, \$30/100; weanlings, \$35/100. Also available are 4 oz. + rats, \$100/100. Quantity discounts available. The Mouse Factory, P.O. Box 85, Alpine TX 79831, (915) 837-7100, Ray Queen.

For sale: from Bayou Rodents, excellent quality feeder mice and rats. Every size available. Pinks starting at \$20/100. Orders are shipped by overnight service Monday thru Thursday. We accept Visa, MasterCard and Discover. For more info, contact Rhonda or Peggy, (800) 722-6102.

For sale: In stock, Flex-watt and Ultra-therm heating products. **Frozen rodents** always available. Mice: pinks—crawlers, 3/\$1; weanlings, 40¢; subadult, 50¢; adults, 65¢; large adults, 75¢. Rats: small, 85¢—\$1; medium, \$1.25–2.00; large, \$2.25–2.75; jumbo, 3/\$10. Call on quantity discounts [note: discount on orders picked up at CHS meetings]. Live rodents available at higher prices. **Available now:** newsletter/catalog—many unique/hard-to-find herp husbandry items. Send business-size SASE for catalog, or call. Scott J. Michaels, D.V.M, Serpent City, P.O. Box 657, Island Lake IL 60042, (815) 363-0290.

For Sale: **Reptile D-lights.** Our 8% is the first and only fluorescent light bulb that duplicates the UV-B output of the sun while having an excellent color rendition (CRI 91). Let your reptile make *exactly* the right amount of vitamin D. Stop under- or overdosing with all those powders. A must-have for iguanas, uromastix, bearded dragons and all diurnal basking lizards. Get yours now! Available in 18", 24", 36", 48". \$34.95 each plus shipping. In California please add 7.75% sales tax. Dealer inquiries invited. Scott Solar (909) 627-3274; 9 – 9 Pacific Time or; Reptek@aol.com anytime. For Animal Use Only.

For sale: handcrafted miniature cartoon-like sculptures of any herp. Refrigerator magnets, desk ornaments, paperweights, earrings, pins etc. You name it—I'll make it. Prices vary. Dave Golde, (847) 679-1530.

For sale: *TURTLES*, the critically acclaimed book by Anita Baskin-Salzberg and Allen Salzberg. Only \$20, postage and shipping included. This is the book "Herp Review" as well "Chelonian Conservation and Biology" Journal, called one of the most accurate and beautiful on turtles for children to come along for a long time. Just send your check to A. Salzberg, 67-87 Booth Street -5B, Forest Hills, NY 11375. We'll autograph it upon request.

For sale: herpetological books. *The Reptiles of Western North America, Volume II: Snakes and Turtles* by VanDenburgh, wrps., \$125; *Salamanders of the Family Plethodontidae* by Dunn, 1st edition, \$125; *Rattlesnakes* by Klauber, hb., \$30; *Herpetology in Australia: A Diverse Discipline* by Lonney and Ayers, wrps., \$65; *The Amphibians of Malawi* by Stewart, \$45; *The Reptiles of Australia* by Worrell, \$25; *The Snakes of India* by Deoras, \$35; *The Snakes of Western Australia* by Storr et al., \$25; *Introduction to Herpetology* by Goin and Goin, \$20; *Life with Ionides* by Lane, \$35; *Tailed Amphibians of Europe* by Steward, \$30. All books in very good to mint condition. Jim McDougal, 23 Rockhill Road, Rocky Point NY 11778, (516) 744-2498.

For sale: **Reptile cage plans.** Finally, an easy and inexpensive way to build your own cages. Choose from four different plan sizes. Small (24 × 24 × 24), Medium (48 × 24 × 24), Large (48 × 24 × 36), or Extra-large (72 × 24 × 36). Based on width × depth × height (in inches). Each set of plans comes with complete instructions, parts list, detailed assembly instructions, and a figure of a completed cage. Plans are \$8 each, or all four plans for \$24. Also available, electric line thermostats. Easy to use and install. Takes minutes and installs directly into the electric line that feeds your heat lamp. Only \$30. Please mail orders to Tait Kjellberg, P.O. Box 72087, Davis CA 95617.

For sale: Custom cage, 6' × 28" × 32", melamine construction, with 2 porcelain incandescent sockets, 48" fluorescent fixture, 28 × 24" Kane heat mat, locking clasp and matching melamine stand (can be used for storage or even a second cage), excellent condition, only \$500; glass tank, 5' × 2' × 2', custom made, in new condition, comes with 5' table stand, \$100, must pick both up (approx. 35 miles NW of Chicago). Rob Carmichael, (847) 615-4388, leave message on voice mail, or E-mail at <RCarmic416@aol.com>.

For sale: 10" alligator snapper with tank and filter, \$250 [permit required in IL]; 5" Florida snapper, free. Frank, (708) 652-2686 mornings.

For sale: veiled chameleons, 3–6 weeks old, from beautiful parents kept on high quality diets and environments, \$15–25 each, comes with detailed care sheet. Rob Carmichael, (847) 615-4388, leave message on voice mail, or E-mail at <RCarmic416@aol.com>.

For sale: four captive-raised Timor monitors, \$100 each or four/\$300; two large reptile enclosures with lighting and assorted aquariums with screen tops. Dan, (773) 275-4716.

For sale: Beautiful, captive-born animals. Bearded dragons—reds, \$75–125, true yellows, \$125, reds/sandfires, \$125, **vitikins**, \$75; adult male bearded dragons—reds, \$200, normals, \$125; bluetongue skink babies, \$150; frilled lizard babies, \$400; *sulcata* tortoise babies, \$100; one male and two female *sulcata* tortoises, adult breeding trio, one female is gravid, \$2000/group. Minimum for shipping, \$100. No minimum for pick-up. Ask about quantity discounts. **Midwest Reptile Farm**, Elk Grove Village IL, (847) 593-2831.

For sale: frilled dragons, \$500; Sandfire × red bearded dragons, \$75 & up; lemon-yellow bearded dragons, \$40 & up; coastal carpet pythons, \$100; Amazon tree boas (garden phase), \$65; trinket rats, \$65; white oak rats, \$25; Okeetees, \$25; Everglades rats, \$20; Cal kings, \$25; Florida kings, \$20. Hiss 'n' Things, Inc., Jim Kavney, (305) 664-2881, E-mail <Hissn1@aol.com>. [FL]

For sale: '96 offspring. Two female Sinaloan milks, \$50 each; Mexican milks, \$50 each; two male San Luis Potosí kings (good coloration), \$65 each; desert kings (*splendida*), \$30 each; tangerine Honduran milks, \$100 each; Mexican black kings (*nigrita*), patterned, \$30 each, reduced pattern, \$35; desert-phase California kings, \$35 each; Pueblan milks, \$40 each; Mexican mountain kings (*knoblochi*), \$300 each; one male variable king (*thayeri*) (hetero for melanistic), \$75; one female gray-banded king (light Blair's phase), nonscented pinkie feeder, \$100; western hognose, also nonscented pinkie feeders, \$35 each [permit needed in IL]; Mexican black king/Cal. king crosses, \$30 each; albino Sonoran gophers, \$50 each; veiled chameleons, \$50 each, six or more, \$35 each, 12 or more, \$30 each, 20 or more, \$25 each (not sold until 7–8 weeks old, prices increase at 10 weeks of age); hetero prairie kings, \$15 each. All '96 offspring are well started. Quantity pricing is available. Also one male hetero variable king (*thayeri*), '95 hatch, large enough to attempt breeding in '97, \$90. Troy, (573) 642-9422. [MO]

For sale: tricolors, albinos and a few secret projects. Send SASE for free price list. Robert Applegate, P.O. Box 338, Campo CA 91906, (619) 478-5123. Also, free husbandry consultation by phone, as a service to the herp community.

Advertisements (cont'd)

For sale: **Northern Mexican pine snakes**, *Pituophis deppei jani*, as seen in the January 1997 *Reptiles* magazine, captive-born babies from a large, unrelated, locality-matched breeding group. The majority of *P. d. jani* in captivity originate from my stock. Care sheet included in every order. Alan Kardon, (210) 623-4311 after 6:00 P.M. Central Time.

For sale: beautiful snakes. One male and one female Guyanan redtails, gorgeous with aberrant pattern, long tails, born 9/1/96, Scott Michaels stock, \$600/pair; male Surinam redtail, awesome color and tail, c.b. 10/93, \$500; female Argentine boa, shows white for high contrast, born 9/96, \$225; male Dumeril's boa, great contrast and color, born 8/96, Dick Goergen stock, \$325. Reasonable offers accepted. Bob, (630) 307-0879.

For sale: two male and two female subadult desert sand boas, *Eryx miliaris*, c.b.&r., \$300/group. Scott, (630) 483-7670.

For sale: c.b. 1996 sand boas. Two male and two female anerythristic Kenyans, \$450/pair; two male and two female hetero for anerythrism Kenyans, \$150/pair; four *Eryx johnii*, \$150. All well started. Steve, (713) 261-6750. [Houston]

For sale: one male and two female c.b.&b. '93 Brazilian rainbow boas, all three unrelated, \$1200/trio; female c.b. '96 albino bullsnake, \$100; c.b. '95 Davis Cal. kings, \$75/pair. Joe, (708) 450-1614.

For sale: one male and one female rough-scaled sand boas (*conicus*), c.b. '93, nice light colors, \$400/pair; two male and one female Kenyan sand boas (*loveridgei*), c.b. '93, unrelated—breeders, nice clean orange, \$450/trio; one male and one female Solomon Islands ground boas (*paulsoni*), proven breeders—brick red phase, l.t.c. '90, \$400/pair; one male and three female New Guinea tree boas (*carinata*), l.t.c. adults, black and gray, \$200/group; two female Isabel Island boas (*Candoia* sp.), unbelievable white phase! l.t.c., \$250 each; six male and six female Isabel Island boas (the white ones), c.b. 12/96, pairs only, \$200/pair; female Savu python, c.b. 5/96, bright orange, fuzzy eater, \$550; one male and two female green tree pythons, c.b. 10/96, have fed four times on large pinks, \$1600/trio. Contact for free list. Jerry Conway, 7154 N. University Drive, #102, Tamarac FL 33321, (954) 722-8758.

For sale: Send SASE to CRC, P.O. Box 0731, Las Vegas NV 89125-0731 for brochures and list of species available. Limited bookings available for guided tours of herpetological collection sites in Nevada. Call/fax (702) 471-0240. E-mail <fpglwmau@anv.net>.

For sale or trade: 70 hatchling African spur-thighed tortoises (*sulcata*), \$75 each. Will trade for the following: male and female Libyan Greek tortoises that were imported last year; also Chaco, marginated, Herrmann's, stars, radiateds, leopards, Galapagos. I have paperwork. Also will trade for jeweled lacertas (*lepidus*). Bob, (602) 919-2872 mobile, or (520) 868-4659 home. [Florence AZ]

For trade: Brazilian rainbow boas (*Epicrates cenchria cenchria*), two c.b. '96 unrelated females in excellent health to trade for 2 yr. old + c.b. female Brazilian rainbow—preferably red or orange stock. Chicago and locality only. Robert Sacha, (708) 636-3286.

Pet-sitting service: Complete in-home pet and plant care, specializing in reptiles and other unique pets. Dogs and cats welcome with open arms, midday dog walking. Experienced and dependable service by devoted animal lovers, serving Chicago and suburbs, reasonable prices, fully insured and bonded. Ask about our habitat consultation and custom-made cages. Exotics & More, (312) 728-5457 or page us at (708) 750-3688.

Repto-rama: Live educational presentation of local herps and herps of the eastern U.S. for parties, scout groups, nature centers etc. Dave, (847) 679-1530.

Software: **TRACS™** record keeping and breeding software for IBM and compatibles. TRACS™ Professional, a full system, \$129; TRACS™ Lite, for the hobbyist, just \$39.95. Add \$5 s&h, \$10 outside U.S. Send for a working demo for \$10 (cost may be applied toward purchase). Or download demo free via Internet at <<http://www.herp.com/tracs/>>. Send check or money order to Leapin' Lizards, 23852 Pacific Coast Highway, #375, Malibu CA 90265.

Tours: Adventure tours to Madagascar! Join **Bill Love** seeing and photographing fauna and flora, heavily herp-biased, across the world's least known mini-continent. Much more fun than shoveling snow November–February. Contact him at: BLUE CHAMELEON VENTURES, P.O. Box 643, Alva FL 33920. TEL: (941) 728-2390, FAX: (941) 728-3276, E-MAIL: <blove@cyberstreet.com>.

Tours: **Road-riding in Costa Rica!** Treat yourself to the trip of a lifetime! Learn about tropical herps, find them, photograph them, see where they live. **Greentracks, Inc.**, offers the best herpetological tours led by internationally acclaimed herpetologists and herpetoculturists. See the Amazon, visit cloud forests, experience the world's greatest rainforest, super sunsets and good company. Call (800) 9-MONKEY.

Video: *Rattlesnake Hunting*, a 60-minute video by a 30-year veteran collector. Don't miss this one! It's as close to being in the field as you can get. (Not a slick commercial production.) Send check or money order for \$19.95 plus \$3 postage & handling to: D. Wheeler, 2705 Sunset Trail, Riverwoods IL 60015. Allow 4–6 weeks for delivery.

Wanted: Banana or bromeliad boas. (*Ungaliophis continentalis* or *Ungaliophis panamensis*). If you have any information on these boas or can tell me how to contact a breeder, I'm interested in getting a pair. Antonio Solis, (630) 588-9258, leave message or E-mail <Solis2000@aol.com>.

Wanted: big-headed turtles; mata mata turtles; Mexican giant mud turtles (*Staurotypus triporcatus*); exceptionally large common snappers (45 lbs. & up); large alligator snappers (over 90 lbs.); spectacled caiman from Trinidad, Tobago and Surinam; dwarf caiman; smooth-fronted caiman; albino turtles (except red-eared sliders). Walt Loose, (610) 926-6028, 9:00 A.M. – 1:00 P.M. or after 11:30 P.M. Eastern Time.

Wanted: Looking for investors interested in opening a reptile museum/pet store/shelter dedicated to educating the general public, performing educational programs and finding good homes for unwanted animals. Please contact Dave Golde with any information on potential investors or government funding, (847) 679-1530.

Wanted: Styrofoam boxes, any size or shape so long as they're not flimsy, preferably with cardboard liners, willing to pay from \$2 to \$5. Bring to CHS meetings. Scott J. Michaels, D.V.M., Serpent City, (815) 363-0290.

Line ads in this publication are run free for CHS members — \$2 per line for nonmembers. Any ad may be refused at the discretion of the Editor. Submit ads to: Michael Dloogatch, 6048 N. Lawndale Avenue, Chicago IL 60659, (773) 588-0728 evening telephone, (312) 782-2868 fax, E-mail <MADadder0@aol.com>.

HERP-ACROSTIC #13 by Mike Dloogatch

1	I	2	S	3	O		4	H	5	F	6	I	7	U	8	O	9	E	10	M	11	L		12	B	13	F	14	J	15	V	—	16	N	17	E	18	K	19	O		20	F	21	P	
22	R	23	E	24	D		25	T	26	J	27	M	—	28	U	29	S	30	L	31	H	32	E		33	I	34	K	35	P	36	R	37	F		38	O	39	F		40	W				
41	O	42	R	43	V	44	Q	45	H	46	W	47	A	48	C	49	E		50	Q	51	G	52	A	53	K	54	F	55	M	56	R		57	O	58	Q		59	F	60	N	61	M	62	I
63	D	64	T		65	E	66	M	67	O	68	M	69	F	70	S		71	J	72	H	73	W		74	Q	75	S	76	V	77	F	78	U		79	R	80	P	81	B	82	H	83	C	
84	L	85	V		86	Q	87	R		88	M	89	W	90	F		91	D	92	J	93	S	94	U	95	F	96	B	97	G	98	Q		99	H	100	D	101	M	102	O	103	V			
104	G	105	Q	106	M	107	F	108	L	109	O		110	J	111	O	112	I	113	W		114	E	115	U	116	R	117	M		118	D	119	F	120	M		121	F	122	O		123	G		
124	W	125	N	126	P	127	A		128	O	129	M	130	L		131	V	132	B	133	F	134	O		135	M	136	V		137	V	138	S	139	K		140	H	141	L	142	P	143	B		
	144	U	145	O	146	I	147	W		148	A	149	S	150	U	151	R	152	L	153	O	154	I	155	C	156	J	157	K		158	E	159	I	160	F		161	N	162	P	163	O			
164	K	165	V	166	T	167	O		168	F	169	M	170	H		171	K	172	P	173	E	174	J		175	O	176	N	177	C	178	B		179	W		180	D	181	Q	182	R	183	L		
184	V		185	O	186	P	187	R	188	L		189	F	190	O		191	N	192	O	193	E		194	F	195	G	196	R	197	M	198	O	199	B	200	U	201	K		202	O	203	T		
	204	W	205	S	206	H	207	R	208	F		209	U	210	Q	211	I	212	E		213	O	214	V	215	F	216	T	217	G		218	O	219	M	220	L	221	D	222	K	223	N			
224	B	225	C	226	L	227	T	228	R	229	V	230	W	231	K	232	I	233	F		234	M	235	I		236	Q	237	F		238	H	239	O	240	J	241	B								

How to solve this puzzle: The diagram, when filled in, will contain a quotation from a published work on herpetology. The numbered squares in the diagram correspond to the numbered blanks under the WORDS. The letter at the upper right of each square indicates the WORD containing the letter to be entered in that square. The WORDS form an acrostic: taking the first letter of each in order spells out the name of the author and the title of the work from which the quotation is taken. The solution will appear in next month's *Bulletin*.

CLUESWORDS

A. Canadian who coined the term “herpetoculturist” (last name only).	127 52 47 148	M. <i>Hypsiglena torquata ochrorhynchus</i> (three words).	61 219 66 234 120 55 68 10 101
B. In reference to the limbs, laid full length against the body.	132 241 224 81 178 199 12 143 96		27 129 88 197 169 135 106 117
C. _____ snakes: <i>Oligodon</i> spp.	83 48 177 225 155	N. Alternative name for the suborder Serpentes.	191 16 161 176 223 60 125
D. Monster of Greek mythology, half woman and half serpent.	63 180 100 91 24 118 221	O. Nor cared the serpent at thy side / To _____ (Tennyson <i>In Memoriam</i> cx) (five words)	190 102 38 8 134 239 3 41 198
E. Nickname of René Lacoste, recently deceased 1920s tennis champion (two words; French).	65 9 114 212 17 173 158 32 23		185 202 57 145 163 167 122 218
	49 193		213 175 19 128 111 192 109 67
F. Review of crocodilian biology by Wilfred T. Neill (1971) (five words, preceded by “The”).	69 168 208 20 119 54 160 59 77		153
	37 95 215 189 5 233 133 90	P. Noxious; foul-smelling.	142 172 35 186 21 80 162 126
	194 121 107 13 237 39	Q. Without concealment or deception; over the table.	86 236 181 210 58 50 74 105 98
G. Chelonian character from Dr. Seuss.	217 97 123 104 51 195		44
H. U.S. heat-seeking air-to-air missile.	140 82 238 45 99 4 72 170 31	R. German herpetologist (1894–1975), bitten and killed at the age of 80 by a longtime pet <i>Thelotornis</i> (full name).	196 42 182 228 56 87 22 187 116
	206		151 36 207 79
I. Like most colubrids.	154 112 232 33 211 6 235 146 1	S. Juvenile.	70 29 2 93 138 75 205 149
	159 62	T. Machines for turning and shaping wood, metal, etc.	216 166 227 25 203 64
J. Vernacular name for <i>Geochelone yniphora</i> .	240 92 110 26 156 14 174 71	U. One who writes in the margins.	150 28 78 7 200 115 144 209 94
K. The kookaburra, for one.	18 231 171 157 53 34 201 164 139	V. One of two major groups of sacred writings in the Bible (two words).	229 165 15 137 103 85 76 184 131
	222		214 43 136
L. <i>Notophthalmus viridescens</i> (two words).	226 141 30 152 130 183 108 188 84	W. Australian elapid known for caudal luring (two words).	73 124 179 204 89 40 230 113 147
	220 11		46

UPCOMING MEETINGS

The next meeting of the Chicago Herpetological Society will be held at 7:30 P.M., Wednesday, January 29, at the Field Museum of Natural History, Roosevelt Road at Lake Shore Drive, in Chicago. Our featured speaker will be **Dr. Spencer Cartwright**, of Indiana University's Northwest Campus at Gary. Dr. Cartwright has been conducting extensive field research in southern Indiana for many years. His program will deal with "Salamander Ecology in Man-made Ponds."

We are required to use the entrance on the west side of the museum. We have permission to use the staff parking lot to the west of the museum. Entrance to this lot is from McPetridge Drive, the wide street just to the south, between the museum and Soldier Field. **Due to the recent rerouting of Lake Shore Drive, there have been some changes in traffic flow — follow the signs to the "Museum Campus."** From southbound Lake Shore Drive this means a right turn onto Roosevelt Road followed by a left on Columbus Drive. The #146 CTA bus goes directly to the museum. Unfortunately, it does not operate past 9:00 P.M. However, after the program anyone needing a ride to a CTA stop will have no trouble finding one—just ask any board member.

Turtle Club

The Chicago Turtle Club will meet Sunday, January 26, 1:00–3:30 P.M., at the North Park Village Nature Center, 5801 N. Pulaski, in Chicago.

Amphibian Club

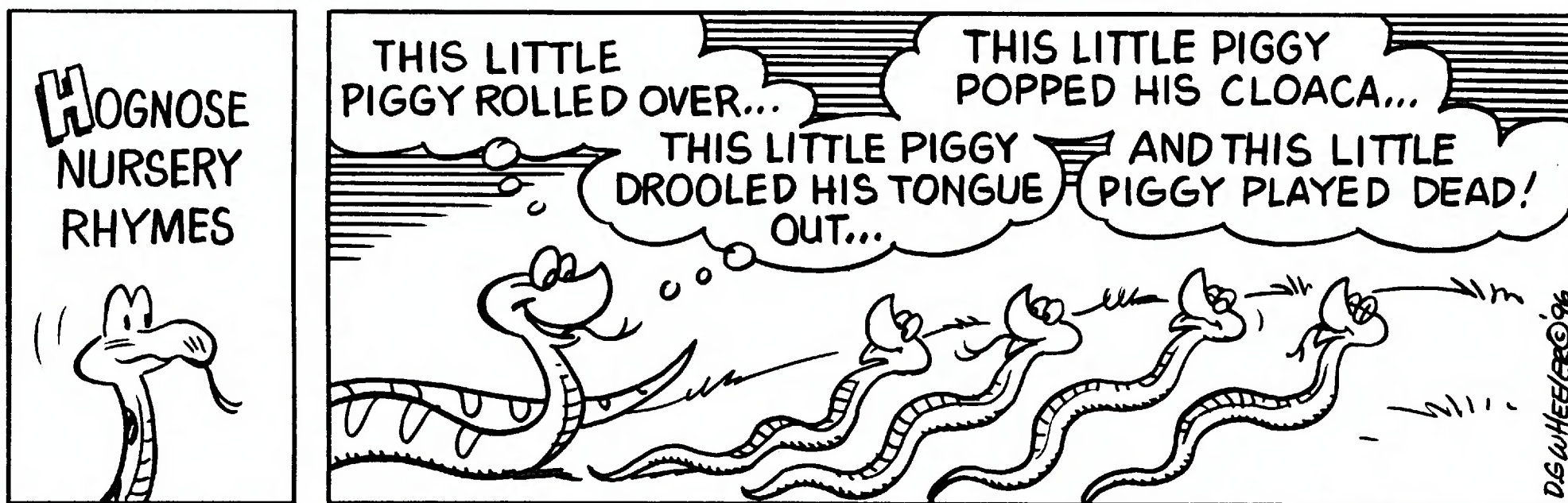
The Amphibian Club will meet Friday, January 31, 7:00–9:00 P.M., at the Skokie Public Library, 5215 Oakton Street. To find out about topics of discussion and details, call Dave Golde at (847) 679-1530. For spring/summer the group is planning field trips to nearby forest preserves that have yet to have had herp surveys completed, as well as to other areas in search of all herps for photography and study.

CHS ADOPTION SERVICE

The Chicago Herpetological Society maintains an adoption service for reptiles and amphibians that are unwanted or can no longer be given proper care. For 1997 CHS President Steve Spitzer has appointed Tonya Maris to head up this activity. Anyone wishing to be on the list as interested in adopting one or more species, or anyone wishing to place an animal for adoption should call Tonya at (312) 243-6642, Noon – 5 P.M. weekdays. Here are the rules:

- All animals are given free of charge to a qualified recipient.
- Qualified recipient means someone who knows how to care for that particular species, has suitable facilities (i.e., cages, aquariums, etc.), and will make a commitment to give the animal proper care.
- Anyone adopting an animal through this service agrees that it is not with the intent of selling the animal for profit.
- Those who need information on the care of an adopted animal are encouraged to purchase our CHS Care in Captivity publication or one of the species-specific booklets available from the CHS Book Service.
- We will put the parties involved in the adoption into contact with each other. It is up to them to make the transfer of ownership after discussing all relevant matters.

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